OPERATIONS WORK PLAN
FOR REMEDIAL ACTION
MELVILLE NORTH LANDFILL
NAVAL EDUCATION AND TRAINING CENTER
NEWPORT, RHODE ISLAND

Prepared for:

DEPARTMENT OF THE NAVY
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Northern Division
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REMOVAL ACTION FOR MELVILLE NORTH LANDFILL

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1.0 INTRODUCTION

1.1 PROJECT BACKGROUND

Excavation and offsite treatment/disposal will be conducted to remove petroleum impacted soil at two defined areas at the Melville North Landfill. While the Melville North Landfill is currently owned by a private party (Melville Marine Industries), the U.S. Navy Northern Division, through the Naval Education and Training Center (NETC) at the Newport Naval Base, has agreed to undertake remediation of the property based on the Navy's former ownership/use of the landfill.

1.2 SITE DESCRIPTION

The Melville North Landfill is located on privately owned property at the northern end of the Newport Naval Base. The site is approximately eight acres in size and is situated between Defense Highway and Narragansett Bay. The Penn Central Railroad tracks run along the eastern side of the former landfill site. The railroad tracks are oriented in an approximate north-south direction. Access to the site is located off Defense Highway through a gate and along a paved entrance way. The paved entrance way leads approximately 180 feet down a small hill and across the railroad tracks to the site.

The site is relatively flat across the central to northern portions. In the southern portion of the site, a slight ridge runs along the eastern half of the site. Ground elevations across the main portion of the site vary between approximately 10 and 20 feet above mean sea level. Along the western edge of the site, the grade of the site is nearly level with the shoreline of Narragansett Bay. Ground water at the Melville North landfill flows to the west toward Narragansett Bay.

The site is vegetated with grass, weeds, and small trees. A strip of small trees is present along the edge of the bay in the west-central portion of the site. A small, more densely wooded area is present along the edge of the bay in the southern portion of the site. Just off the site, a small wooded area is also present along the central to southernmost edge of the site, between the site and Defense Highway.

1.3 WORK OBJECTIVES

The objective of the soil remediation project is to address removal of heavily impacted soils, which would potentially act as a source of continuing contaminant migration within a landfill setting. The following soil remediation goals will be used for the soil excavation of the two identified petroleum impacted soil areas at the Melville North Landfill:

* **Total Petroleum Hydrocarbons (TPH) - 1,000 mg/kg or ppm**

* **No physical evidence of petroleum-based contamination (e.g., soil discoloration and odor)**

* **Toxicity Characteristic Leaching Procedure Compounds (TCLP) - Not to exceed Characteristically Hazardous limits.**

2.0 REMEDIAL OPERATIONS

To accomplish the objectives, OHM has divided the project into eight tasks. These eight tasks incorporate all of the activities of the Specifications and were established to divide the project into logical construction activities for planning, performance and control. The eight tasks are:

TASK 1 - PROJECT PLANNING
TASK 2 - MOBILIZATION AND SITE PREPARATION
TASK 3 - EXCAVATION AND BACKFILL
TASK 4 - SAMPLING AND ANALYSIS
TASK 5 - TRANSPORTATION AND DISPOSAL
TASK 6 - SITE RESTORATION
TASK 7 - DEMOBILIZATION
TASK 8 - POST-CONSTRUCTION SUBMITTALS

Subsequent sections of this Work Plan describe the approach and resources for each task.

2.1 TASK 1 - PROJECT PLANNING

Before site mobilization, OHM will submit the following preconstruction submittals:

1. Submittal Register
2. Construction Schedule
3. Work Plan including
   - Clearing and Grubbing Plan
   - Dewatering Plan
4. Quality Control Plan
5. Site Health and Safety Plan
6. Accident Prevention Plan
7. Sampling and Analysis Plan
8. Spill and Discharge Control Plan
9. Offsite Disposal Plan

2.2 TASK 2 - MOBILIZATION AND SITE PREPARATION

OHM is planning to mobilize personnel and equipment on May 1, 1995 from the Hopkinton, Massachusetts and Windsor, New Jersey OHM division facilities.

OHM will establish the work zones detailed in the Site Health and Safety Plan (HASP). The work zones, 2-1212consisting of the Support Zone (SZ), Contamination Reduction Zone (CRZ) and the Exclusion Zone (EZ), and the level of Personal Protective Equipment (PPE) to be used throughout the site, will be established in the HASP, using the existing analytical data collected from previous site investigations. The zones and PPE levels may be revised based upon additional site specific information obtained during remedial activities. The work zones will be layed out by tby survey and marked with high-visibility tape barriers.

An area will be selected for an office trailer and a personnel decontamination trailer. Erosion controls will be installed around the selected site. Clearing and grubbing of the site will be performed if necessary. Once completed the loam will be stripped and stockpiled adjacent to the site. A gravel pad will be constructed upon which the trailers will be installed. The trailers will be equipped with electricity, bottled drinking water, telephones and furniture as applicable. All trailers will be anchored in place as required by EMM385-1-1. An equipment and material staging area will also be selected and marked adjacent to the trailer staging area.

Erosion and sediment control barriers will be installed in accordance with the contract drawings, along the bank next to the work areas (Area's N & S).

All trees, stumps, logs, shrubs, and brush within the clearing limits as shown on the contract drawings will be cut flush with the existing grade. Once cut and felled, all vegetative material will be chipped, and disposed of offsite. During the chipping and clearing and grubbing operations, all roadways, and walks will be kept clear of debris at all times.

A concrete decontamination pad will be constructed to collect the water produced from the high-pressure sprayer used for decontamination of debris and equipment. A collection sump will be installed to transfer the rinse water to a holding tank by means of a one hp submersible pump.

An area, approximately 50 feet x 50 feet, will also be cleared, grubbed and graded to receive a 100,000 gallon holding tank. This tank will be installed for temporary storage of water encountered during excavation dewatering and to collect rinsate from the decontamination facilities.

2.3 TASK 3 - EXCAVATION AND BACKFILL

The government and OHM will make an initial survey before the start of excavation. Once clearing and grubbing is completed excavation activities will commence at "AREA N", at the northern end of the site. This area occupies approximately 5700
square feet prior to slope cutback required to maintain OSHA standards. Topsoil will be stripped and stockpiled for possible respreading during site restoration. Excavation will proceed to the contract limits. Excavation will be accomplished using the open cut method. Based on available boring data, the side slopes will be excavated to a one and one half horizontal to one vertical in accordance with OSHA regulations. Once the contract limit is reached analytical data will be collected to assure that no unacceptable contamination remains. Excavation efforts will be relocated to "AREA S" (9,900 square feet) while OHM awaits analytical results. Once confirmation samples results are received backfilling will begin. Excavation and backfilling methodology is discussed below.

Given the proximity of the southern excavation "AREA S" to the top of the slope near the Narragansett Bay, steel sheet piling may be employed to remove soils outside the minimum excavation limits in this area to

prevent disturbance of the slope facing Narragansett Bay. OHM will prepare and submit to the Navy before the work at this area begins, all required submittals identified in Contract Specification 02220.

A Caterpillar 225 track excavator (or equivalent) will excavate and directly load the excavated material into 25 ton off-road dump trucks for transport to a temporary storage area located midway between the excavations. Material that contains an excessive amount of water (will not pass paint filter test) will be placed on a 30-mil polyethylene liner adjacent to the excavation. This excavated material will be allowed to drain, back into the excavation, prior to transport to the temporary storage area. Excavated materials will be field screened, segregated and stockpiled as described in Task 4 - Sampling and Analysis. Initially, all personnel in the exclusion zone will wear Level C personnel protective equipment. PPE levels may be revised based on additional site specific information obtained during excavation. OHM will use a calibrated photoionization detector (PID) for air monitoring as well as personal sampling pumps for VOC's and metals. The PID will also be used for field screening of soils and miscellaneous debris that may be encountered during excavation.

Due to the variable water table observed at the landfill and the tidal influence of Narragansett bay, groundwater may be encountered during excavation. If necessary, construction dewatering will be accomplished using a 3" trash pump. Water will be collected from a stone filled sump at the base of the excavation. Groundwater will be pumped to a 100K holding tank for temporary storage, analysis and eventual disposal. Should groundwater meet the USEPA discharge criteria, treatment prior to discharge may not be required. The storage tank will be located between "AREA S" and the stone construction entrance shown on Drawing C-2.

When the analytical results from perimeter sampling confirm that the cleanup objectives have been achieved, excavation will cease and backfill operations will begin. Backfill materials will consist of all surplus "clean" soil and debris as well as imported backfill. Debris used as backfill will be decontaminated prior to placement back into the excavation.

OHM proposes to use the following resources during excavation and backfilling operations.

PERSONNEL	EQUIPMENT	SPECIAL TOOLS AND EQUIPMENT
(1) Project Superintendent	(1) Trackhoe excavator (1)	Photoionization detector (1)
(1) T&D Coordinator Assistant	(1) Backhoe (1)	LEL/Explosimeter (1)
(1) Health & Safety Officer	(1) Loader	Personnel Sampling Pumps
(3) Equipment Operators	(1) Dozer	Transport vehicles (2)
(6) Recovery Technicians	(1) Roller	Decontamination Trailer
(1) Project Accountant	(2) Off-road dump trucks	Office Trailer
(2) Truck Drivers	(1) 5000 gallon water truck	Storage Trailer
(1) Chemist		

Backfill will be loaded into the 25 ton off-road dump trucks utilizing a Cat 950 Loader (or equivalent) and transported to the excavation area from a stockpile area. The stockpile area will be remote from the contaminated soil storage area to prevent cross contamination. The material will be spread in 12" lifts by a Cat D-6 dozer and compacted to 85% of the modified proctor density using a vibratory roller if necessary. Compaction tests will be performed every 2000 SF per lift in accordance with ASTM D 1556 (sand -cone method). A water wagon will be onsite during backfill operations to provide water, if necessary, to achieve the compaction requirements and control dust.

2.4 TASK 4 - SAMPLING AND ANALYSIS

Excavation and handling of soil and debris will be performed in a manner which will limit the mixing of soils and debris with different levels and types of contamination.

Contaminated soils will be segregated into four categories which will be stockpiled independently of each other:

Rhode Island Regulated Soil - Indicates visible petroleum contamination, petroleum odors or sustained non-methane PID or FID readings above 10 units.

Restricted Non-hazardous Soil - Indicates visible petroleum contamination, petroleum odors or sustained non-methane PID or FID readings above 100 units.

Hazardous Waste Soil - Indicates visible petroleum contamination, petroleum odors or sustained non-methane PID or FID readings above 100 units.

Unimpacted Soil - Indicates no visible contamination, petroleum odors, or PID reading over 10 units.

Field screening of soil will be accomplished by visual examination and use of a calibrated Photoionization Detector (PID). One (1) representative sample per truck load of excavated soil will be analyzed utilizing the PID and the soil will be stockpiled and sampled for analytical testing according to the specifications.

DESCRIPTION	PID READING (UNITS)	SAMPLING FREQUENCY	TESTING PARAMETERS
Rhode Island Regulated Soil	> 10	1/150 CY 1/500 CY	TPH, Paint Filter Test TCLP for VOCs, SVOCs, and Metals, Ignitability, Reactivity, pH, Method 8240 VOCs, Total Lead
Restricted Non-Hazardous soil	> 100	1/150 CY 1/500 CY	TPH, Paint Filter Test TCLP for VOCs, SVOCs, and Metals, Ignitability, Reactivity, pH, Method 8240 VOCs, Total Lead
Hazardous Waste Soil	> 1000	1/40 CY	TPH, TCLP for VOCs, SVOCs, and Metals, Ignitability, Reactivity, Corrosivity, PCBs, Total Lead, Method 8020 VOCs, Paint Filter Test
Unimpacted Soil	<10	1/400 CY	TPH by EPA Method 8015, PCB's, TCLP VOCs, SVOCs and Metals
Contaminated Water	N/A	1/10,000 GAL	TPH by Method 8015, VOCs by EPA Methods 8010 and 8020, pH

The temporary storage area will be covered with 30-mil polyethylene sheeting. The excavated soil will be placed on the impervious barrier and covered with 6 mil polyethylene sheeting. Sheeting will be held in place using sand bags and line as necessary. A straw bale berm will be placed around the outer limits of the containment area and covered with 6 mil polyethylene sheeting.

Within two days of completion of the excavation, soil samples will be collected around the excavated perimeter, at an elevation one foot above the preconstruction groundwater table. A discrete soil sample will be collected for every 50 linear feet of excavation perimeter and analyzed for full TCLP parameters.

2.5 TASK 5 - TRANSPORTATION AND DISPOSAL

OHM will be responsible for waste profiling and preparing manifests and shipping documentation for off-site transportation and disposal in accordance with the Transportation and Disposal Plan included herein. Proper shipping names, packaging, marking, labeling, and placarding will be completed in compliance with 49 CFR parts 262 and 263. Prior to leaving the site, all waste shipments will be carefully screened by OHM to ensure that all containers have been properly prepared for shipment. OHM will not ship any waste without first receiving permission from the contracting officer.

The disposal of all waste from the site will be at approved facilities. The selection of the type of facility, i.e., landfills, incinerators, or other facilities, is limited by the physical and chemical properties associated with the material to be disposed of and the permit restrictions of a specific facility.

2.6 TASK 6 - SITE RESTORATION

Site restoration includes furnishing (if necessary) and placing of topsoil, restoration of the gravel road removed during the excavation of Area N, and hydroseeding of all areas disturbed by construction activities.

Upon completion of all backfill and disposal activities, the contaminated soil storage area, decontamination pad, and the 100K holding tank area will be decontaminated as necessary and removed from the site. The construction entrance, support zone(s), silt fence, haybales and miscellaneous construction debris will be disassembled, removed and disposed of as appropriate. Areas disturbed by these activities will then be regraded, reloamed as necessary, and restored.

The gravel roadway, removed in the excavation of Area N, will be re-installed. The roadway will be graded to accommodate 8" of gravel placed on woven geotextile as detailed on drawing C-4.

Area N and S will receive 4" of topsoil. Topsoil stripped and stockpiled during site preparation will be used prior to purchasing offsite material.

All areas disturbed by construction will be receiving the following:

Seed:	5 lbs/1000 SF

Fertilizer:	25 lbs/1000 SF
Limestone:	70 lbs/1000 SF

Mulch and water will be provided to establish an acceptable stand of grass.

2.7 TASK 7 - DEMOBILIZATION

Demobilization will be performed following site restoration. Site support facilities will be removed, and temporary utilities will be terminated and service lines removed. If restoration of the this support zone is required it will be performed at this time.

2.8 TASK 8 - POST CONSTRUCTION SUBMITTALS

OHM will prepare and submit the following documents upon completion of the project:

* As-Built Drawings
* Final Report

3.0 ORGANIZATION OF PROJECT

3.1 ANTICIPATED TASKS

OHM has reviewed the proposed action SOW and has determined that the following activities will be performed in order to complete the project.

- Perform the site preparation activities.
- Perform clearing and grubbing.
- Perform minor construction activities.
- Abandon wells.
- Install dewatering system.
- Perform the required excavation.
- Perform the required backfilling and compaction.
- Install loam as required.
- Perform site cleanup and vegetate all disturbed areas.
- Demobilize resources.
- Prepare final report and submittals.

3.2 MANPOWER REQUIREMENTS

This work requires that various crews be on site ,often at the same time, to perform all of the removal action activities. OHM will utilize separate crews for some of the proposed activities. Table 2-1 provides the listing of activities, the make up of the proposed crew for that activity and equipment of that crew. Crew size and equipment may be subject to change, depending upon field conditions experienced while executing the work.

3.3 MANAGERIAL APPROACH TO CONSTRUCTION

OHM's approach to project management is to place the management at a level close to the Navy technical representative (NTR). OHM's project manager will work directly with NTR to achieve mutual satisfaction with the project. The OHM project manager will have overall project responsibility to NTR from a schedule, cost, and resources standpoint.

OHM assigns a project supervisor to be responsible for accomplishing the work in the field. The project supervisor reports directly to the project manager. The project supervisor is responsible for the day-to-day activities in the field.

The project manager and site supervisor have jointly developed the project schedules and budgets and work to achieve these goals over the duration of the project. The schedule and budgets also include the resources required to perform the work. The required resources will be reviewed with OHM's regional resource manager to schedule the necessary resources for the project in a timely way to assure availibility. These activities are part of the initial planning activities and act as a baseline for measuring the progress of the project.

OHM will also provide a project accountant (PA), on site, to assist the site supervisor in compiling the daily site costs and test results, and assist in procurement activities.

The proposed project organization is presented in Figure 1-2. The duties and responsibilities of the project team members are defined in Section 3.4.

3.4 PERSONNEL - DUTIES AND RESPONSIBILITIES

3.4.1 OHM Responsibilities

The responsibilities of OHM are:

- Perform the remedial activities defined in the Work Plan and required under this delivery order.
- Prepare and submit to the Navy monthly status reports containing such information regarding percentage of completion, unresolved delays (encountered or anticipated) that may affect the schedule and a description of efforts made to mitigate those delays or anticipated delays, revise construction schedule, listing of activities scheduled for the next month, and other information relating to the progress of construction as is customary in the industry.
- Initiate, maintain, and supervise all safety precautions and programs in connection with the work.
- If conflict, error, or discrepancy is found in contract documents,report to the Navy representative in writing before proceeding to obtain a written interpretation or clarification from the Navy.

- Notify the Navy representative in writing of any subsurface or latent physical conditions encountered which differ materially from those specified or indicated.
- Implement CQCP and establish chain of command.
- Conduct surveys for establishing pay limits and determining quantities for progress pay estimates; furnish Navy with one copy of all field notes of each survey.
- Provide a site supervisor, who will be OHM's representative at the site.
- If materials or equipment, or specific means, methods, techniques, sequence, or procedure of construction is indicated in or required by the contract documents, furnish or utilize a substitute acceptable to the NTR if needed.
- Procure subcontractor services; submit these services to the Navy for acceptance.
- Maintain at the site two record copies of all as-built drawings, one copy of specifications, addenda, written amendments, change orders, work directive changes, field test records, field orders, and written interpretations and clarifications. Upon completion of the work, deliver these records to the Navy.

3.4.2 Responsibilities of OHM's Project Team

The remedial action at the Melville Landfill site will be led by a project-dedicated team, as shown on Figure 2, who is responsible for the management and completion of the overall project and the primary components of design and remediation. The organization chart (Figure 1-2) defines the primary "chain of command."

The project manager will have the overall responsibility for project efforts including technical, schedule, and budget aspects. The project manager will be responsible for the day-to-day management and integration of all elements of the project and will be accountable for each activity. Supporting the project manager will be the project engineer for technical and site activities functions. Supporting the project manager in the field will be the project engineer, site supervisor, site safety officer (SSO), PA, and other support personnel as needed.

Separate from the project management chain of command is the QC chain of command under the direction of the QC engineer. The OHM QC engineer will work independently of the OHM project team.

Responsibilities and authority of the project manager and supporting field personnel fundamental to the project are discussed in the following sections. Responsibilities and authority of the QC engineer are discussed in Section 2.4.9.

3.4.3 Project Manager

The project manager is the person in charge of the overall project and has full authority for coordination and direction of the project. The project manager will communicate directly with the NTR. Specific responsibilities of the project manager include:

- Interpret and plan overall work effort
- Approve work products, plans, and deliverables
- Overall responsibility for preparation and planning of documents for the work
- Respond to resource requirements by defining resource needs and securing the commitments for staff and equipment
- Monitor subcontractor performance, schedules, budgets, and invoices
- Develop, review, and meet work schedule and budget objectives
- Ensure technical adequacy of field, laboratory, data management, and construction activities
- Prepare for and attend meetings with the Navy, as required
- Manage and coordinate group interfaces
- Document the need for contract modifications, if needed.

To carry out these functions, the project manager will have the authority to:

- Make work assignments for staff and subcontractors
- Allocate additional personnel as needed

- Establish work budgets and schedules with milestones
- Approve subcontractor work and invoices
- Communicate with the site supervisor about day-to-day activities and alert the program manager and/or the project engineer to potential problems
- Maintain OHM quality standards.

3.4.4 Project Engineer

The project engineer is responsible for performance of the technical aspects of the remediation and construction activities. Other responsibilities include:

- Day-to-day coordination of technical activities
- Provide technical guidance
- Ensure technical adequacy of field, laboratory, data management, and construction activities
- Interfacing with the project manager for engineering activities
- Acting as a focal point for coordination of engineering project deliverables
- Approving the appropriate project-specific procedures and the as-built drawings.

3.4.5 Site Supervisor

The site supervisor is the OHM contact at the site and is responsible for performing the remediation activities in accordance with the work plan and other project plans and specifications. The site supervisor's responsibilities include, but are not limited to:

- Coordinating the SSO for implementing the day-to-day aspects of the HASP
- Coordinating engineering activities at the site as directed by the project engineer or project manager

- Managing the day-to-day execution of the project at the site including administrative and procurement activities
- Monitor work progress and schedule, and advise project manager of variances
- Implementing state and federal regulations pertinent to the work
- Assisting in preparation of work progress schedules, project reports, "as-built" drawings, and required compliance submittals
- Compiling the daily logs into a weekly report which will be forwarded to the project manager
- Attending work progress meeting
- Reporting to the project manager changes desired in the contract documents so that required review and approval can be accomplished prior to when the change is made, and reporting for review and approval changes necessitated by unanticipated site conditions
- Procuring, with approval of the project manager, subcontractor services
- Ensuring that remedial rework is subjected to the same quality requirements as the original work.

3.4.6 Site Safety Officer

The SSO is responsible for implementing the HASP which satisfies federal, state, and local regulations and is consistent with site conditions. The SSO may take actions independent of the project group to stop the project, if required, for compliance with the HASP.

The site supervisor is responsible for the day-to-day implementation of the HASP during site activities. The SSO will oversee this day-to-day implementation, including the following responsibilities:

- Implementing the day-to-day aspects of the HASP
- Directing the entrance and exit medical physical requirements, if required
- Approval of personnel protective equipment and safety procedures specified in the HASP

- Overseeing the maintenance and use of field monitoring equipment necessary to define on-site hazards associated with remediation
- Designating appropriate personnel protection level; determining protection level upgrades and downgrades as site conditions permit
- Providing necessary guidance to the project staff so they can safely perform their functions in accordance with federal and state regulations.

3.4.7 Project Accountant

The responsibilities of the PA are:

- Assist the project manager in preparation of schedules, budgets, and invoices
- Establish tracking systems to track costs and budget variances
- Provide weekly progress reports on budget and schedule status to the project manager
- Prepare daily report deliverables
- Audit weekly postings of charges to work budgets
- Assist the project manager in communicating work procedures and goals to OHM's staff
- Assist site supervisor in procurement activities.

3.4.8 Sample Technician

The responsibilities of the sample technician are:

- Performing all sampling activities in accordance with the approved protocols
- Assist the geotechnician with geotechnical testing, as needed.

3.4.9 Quality Control Representative

The quality control (QC) representative is independent of the site project chain of command and reports to the Program QC Manager and works with the NTR.

The QC representative is responsible for coordinating inspection and surveillance activities. The QC representative will monitor the full site activities on a full-time basis. The results of inspections and surveillances will be documented in a report describing the events reviewed that day. The QC representative will also be responsible for:

- Reviewing results of on-site verification testing and inspection reports.
- Implementing appropriate provisions of this plan.
- Serving as the collection point for remediation-related nonconformance.
- Perform, or cause to be performed, daily inspections and tests of the scope and character necessary to achieve the quality of construction outlined in the plans and specifications for work under the contract performed on or off site.
- Maintain the latest applicable drawings and specifications with amendments and/or approved modifications at the job site and assure that they are used for shop drawings, fabrication, construction, inspections, and testing.
- Maintain marked-up drawings at the site depicting as-built conditions. The drawings will be available for review by the NTR at all times.
- Maintain a contractor-generated submittal register, ENG Form 4288, for the duration of the contract. A review of the register will be performed at least every 14 days in conjunction with the scheduled dates on the register and in relation to the actual work status. Appropriate actions will be undertaken should slippages or other changes so necessitate. Refer to Appendix A for the Submittal Register.
- Review shop drawings and/or other submittals for compliance with the contract requirements prior to their transmission to the NTR.
- Establish and maintain a Rework Item List of work that does not conform to specifications. Track and monitor the items on the list to assure the rework inspection and testing activities and frequencies are in accordance with the contract requirements.

- Attend and assist the NTR at the pre-final inspection and the final acceptance inspection.

3.4.10 Transportation and Disposal Coordinator

OHM will assign a transportation and disposal coordinator to the project team to manage the transportation and disposal of the various wastes. The transportation and disposal coordinator will be responsible for preparing waste profiles and manifests, and for obtaining cost-effective transportation disposal options and disposal facility approval. The coordinator will work closely with the NTR.

3.4.11 Laboratory Responsibilities

OHM will use a third-party, independent geotechnical and chemical/analytical testing laboratories to perform various tests on soil, gravel, and water as project's progress dictates. The responsibilities of this laboratory are to provide accurate and timely testing and reporting which aid in the progress of work of this project, according to specified guidelines.

3.4.11.1 Geotechnical Laboratory Manager

The ultimate responsibility for implementing quality assurance/quality control (QA/QC) within the laboratory resides with the geotechnical laboratory manager.

This responsibility includes, but is not limited to, the following:

- Act as the principal contact between OHM and the laboratory
- Support the geotechnical laboratory coordinator to ensure that all data are collected under in-control conditions
- Submit the weekly QC report through the OHM Program QC Manager to the NTR
- Upon notification by the OHM project manager of samples to be received, inform the laboratory coordinator of sample arrivals so the required analyses can be scheduled into the laboratory workload in such a manner as to meet the QC requirements contained in the CQCP

- Submit to the OHM project manager all pertinent information produced by the laboratory necessary to prepare the draft and final Reports for the project

- Track all samples and analyses that are submitted to the laboratory to verify that all work is being accomplished in a timely manner

- Support the laboratory coordinator, who coordinates sample transfer and analysis of all incoming samples from the field to the laboratory; the laboratory coordinator reports to the laboratory manager

- Support the laboratory coordinator to ensure the completion of the subcontractor work for the project is accomplished in a timely manner

- Verify that sampling procedures are adequate for the sample types received

- Oversee the quality of purchased laboratory materials, reagents, and chemicals to verify that these supplies do not jeopardize the quality of analytical results

- Ensure implementation of corrective action for any QA/QC deficiencies.

3.4.11.2 Chemical Analysis Laboratory Coordinator

The laboratory coordinator has the responsibility within the laboratory to establish, oversee, and audit specific procedures for documenting and controlling analytical data quality. Many of the procedures may be implemented by other individuals, but the laboratory coordinator must monitor that procedures are being implemented properly and the results interpreted correctly. The laboratory coordinator's responsibilities include, but are not limited to, the following:

- Monitor the QA and QC activities of the laboratory to verify conformance with authorized policies, procedures, and sound practices, and recommend improvements as necessary.

- Inform the OHM project manager, the laboratory manager, and the laboratory management of any nonconformance to their QA/QC program.

- Request analytical reference materials from the Navy, as needed, through the OHM Program QC Manager.

- Verify that all records, logs, standard procedures, project plans, and

analytical results are maintained in a retrievable fashion.

- Verify that copies of standard procedures and project plans are distributed to all laboratory personnel involved in the project.

- Establish with the analysts, laboratory management, and the laboratory manager, the correct analytical lot size, the correct QC samples to be included in each lot, and the correct procedures for evaluating acceptable analytical performance within established guidelines.

- Verify that analytical sampling is conducted in a manner consistent with the CQCP.

- Verify that logging of received samples includes establishing appropriate lot size for each analysis and allocating sample numbers for the correct control samples in each lot.

- Review all laboratory data before those data are transmitted to permanent storage, or reported to other project participants.

- Verify that analysts are preparing QC samples, maintaining control charts, and implementing and documenting corrective action when necessary.

- Review control charts produced by the data management group on a daily basis, discuss control chart results with the laboratory manager, and submit charts to the NTR on a weekly basis through the OHM Program QC Manager.

- Maintain an awareness of the entire laboratory operation to detect conditions which may directly or indirectly jeopardize controls of the various analytical systems (i.e., improper calibration of equipment, gross contamination through improper storage of samples).

- Audit sampling documentation and procedures to ensure that samples are labeled, preserved, stored, and transported according to prescribed methods.

4.0 FINAL REPORT

A final engineering report will be written and finalized within 30 days of project completion and furnished to the Navy. The 30 days will commence on the first day after the final inspection has been completed. The complete final engineering report will contain the following items:

- Executive Summary of Action
- Summary of Record Documents
- Project Description
- Field Investigation Summary
- Field Changes and Project Modifications
- Discussion of Remediation Activities Performed
- Summary of Procedures Employed During the Remedial Action
- Materials Testing Data (CQ)
- As-Built Drawings
- Final Health and Safety Report
- CQ Summary Report
- Descriptions of Actions Taken and Any Potential Future Actions
- Conclusions Regarding Conformance of Treatment Process with Performance Standards

5.0 FIELD PROCEDURES

5.1 TRIP REPORT

Prior to beginning the site work, OHM's project manager and site supervisor will perform a reconnaissance survey of the project site with the Contracting Officer Technical Representative (COTR) and the NTR. The survey will define areas of concern by the NTR and OHM's proposed method to alleviate the concerns. A trip report will be prepared and submitted to the Navy.

5.2 DAILY SAFETY MEETING

OHM supervisory personnel will hold daily tailgate safety meetings to advise the workers of proper methods of performing the work planned for the day. The topic of discussion will be listed on a sign-in sheet and the PA will ensure everyone present signs the sheet which will be kept as a record of the meeting.

5.3 STATUS REPORTS

The OHM project manager, with assistance from the site supervisor and the PA, will prepare monthly status reports for the current condition of the project. The status reports will include a Technical Progress Report, Cost Performance Report, Modification Log, Project Schedule, Government Materials Tracking Report, Variance Analysis Report, and a Waste Materials Report.

5.4 NONCOMPLIANCE CHECKLIST

OHM's CQC representative will prepare and submit to the NTR on a monthly basis a list of noncomplying work (Rework Item List).

5.5 DAILY REPORT/CQC REPORT

OHM's CQC representative will prepare and submit to the NTR on a daily basis (every day that work is performed) the Daily Report to Inspector/CQC Report (DRI/CQC Report). The DRI/CQC Report will be submitted by 10:00 a.m. the following day. A copy of the daily report will be sent to the OHM project manager daily and a copy will be maintained on site.

5.6 TEST RESULTS SUMMARY REPORT

OHM's CQC representative will prepare a summary report of all field tests containing both "required" and "actual" results plus "passed" or "failed" for conforming, nonconforming, and repeated test results. The report will be submitted to the NTR and OHM project manager at the end of each month.

5.7 SUBMITTAL STATUS LOG

The CQC representative will prepare and continually update a Submittal Status Log to document quality control for materials, inspection, and testing. The Submittal Status Log will be maintained on site and available for government review.

5.8 PROJECT SCHEDULE

A detailed schedule for the completion of the remedial activities is currently being prepared and will be submitted to the Navy as a separate document.

6.0 PERMIT REQUIREMENTS

OHM will obtain the required permits to perform the remedial activities. A summary of the permitting requirements is presented below.

- Applicable Insurance - All insurance included in Specification Section 1010 Paragraph 1.9 will be or has been obtained and proof of insurance will be forwarded to the COTR.

- Station Regulations - All OHM direct personnel and subcontract personnel will be advised of the Station Regulations by a member of the Project Team on site. A written log of people who have received this information will be kept on-site for the NTR to review as necessary.

- Station Permits - OHM will apply for all Station Permits required in Contract Specification 01011 Paragraph 3.4.2. These permits will be issued in in full force prior to the work covered by the permit commencing.

- Solid Waste Disposal Permit - A copy of the Solid Waste Disposal Permit required by Contract Specification 01560 paragraph 1.4.1.1 will be submitted to the NTR prior to any solid waste being moved off-site if applicable.

- Hazardous Waste Disposal Permit - A copy of the Hazardous Waste Disposal Permit will be submitted to the NTR prior to any waste being disposed of off-site as required in Contract Specification 01560 paragraph 1.4.1.2.

- Prior to commencement of the remedial work OHM will arrange a meeting with the NTR and COTR at the site to survey the site. A report of the survey findings along with preremedial photographs will be submitted to the NTR.

7.0 PROCEDURES FOR DECONTAMINATION

This section describes an overview of the procedures necessary to ensure that both personnel and equipment are free from contamination when leaving the work site, either at the end of each day, during scheduled breaks, and/or upon completion of the project. Details regarding decontamination procedures for personnel, equipment, and vehicles may be found in the SHERP.

7.1 PERSONNEL DECONTAMINATION

The following site activities present the greatest opportunity for personnel contamination:

- Clearing and grubbing
- Excavation of contaminated soils
- Sampling of contaminated soils

OHM will apply engineering and/or work practice controls as a means of protecting personnel in performance of site-specific tasks. Engineering controls will be implemented to reduce and maintain employee exposure to at or below safe levels for those tasks that which include possible exposure to known or suspected hazards. When engineering controls are impractical or insufficient to protect employees during site operations, OHM will use personal protection equipment (PPE).

Any personnel exposed to possible contamination during daily activities will have to follow proper decontamination procedures. Decontamination procedures will ensure that material which workers may have contacted in the EZ does not result in personal exposure and is not spread to clean areas of the site. The EZs will be limited to the work areas that are considered or suspected to be contaminated. The sequence listed below describes the general decontamination procedures. The specific stages will vary depending on the site, the task, the protection level, etc.

- Go to the end of EZ
- Wash outer boots and gloves in detergent solution
- Rinse outer boots and gloves in water
- Remove outer boots and let dry
- Remove outer gloves and let dry
- Cross into contamination reduction zone (CRZ)
- Wash splash suit
- Rinse splash suit
- Remove splash suit and let dry
- Remove and wash respirator
- Rinse respirator and hang to dry
- Remove polycoat Tyvek and discard
- Remove booties and discard
- Remove sample gloves and discard.

7.1.1 Suspected Contamination

Any employee suspected of sustaining skin contact with chemical materials will first use the emergency shower. Following a thorough drenching, the worker will proceed to the decontamination facility. There, the worker will remove clothing, shower, don clean clothing, and immediately be taken to the first-aid station.

7.1.2 Personal Hygiene

Before any eating, smoking, or drinking, personnel will wash hands, arms, neck, and face.

7.2 EQUIPMENT DECONTAMINATION

All contaminated equipment will be decontaminated before leaving the site. Decontamination procedures will vary depending on the contaminant involved, but may include sweeping, wiping, scraping, hosing, or steaming the exterior of the equipment. Personnel performing this task will wear the proper PPE as prescribed by the SHSO. Two decontamination stations are planned for this project. A personnel decontamination station will be established at the end of the EZ to allow field personnel decontamination before entering into the CRZ. An equipment decontamination pad will be constructed in the CRZ to decontaminate the equipment/trucks before they leave the site.

7.3 DISPOSAL

All liquids and disposable clothing will be treated as contaminated waste and disposed of properly.

8.0 TRANSPORTATION AND DISPOSAL PLAN

The disposal sites and methods will be determined based on the following requirements:

1. Federal and state disposal regulations.
2. Transportation and disposal costs.
3. Environmental and liability advantages.
4. Disposal site requirements.

Non RCRA regulated soils can be disposed of in a subtitle D landfill, asphalt batching or thermal treatment. A decision of cost verses liability reduction may have to be made by the waste generator. A summary of these disposal options is described below.

8.1 Landfill

Waste that does not meet the requirements of a RCRA (EPA) hazardous waste may be disposed of in Subtitle D municipal landfills. These landfills may have restrictions that limit the land burial of oil contaminated soils. Currently Rhode Island and Massachusetts environmental regulations prevent the land disposal of oil waste in their states. Landfills in Connecticut and Maine can accept oil contaminated soil that meet disposal criteria listed below. Disposal of oil contaminated soil in Connecticut landfills is also subject to approval of the Connecticut Department of Environmental Management. The presences of PCB's in some of the soil samples may prevent that soil from disposal at Subtitle D landfills. Land disposal is generally the least expensive option. Future liability for the waste remains high since the material is not being treated to reduce it's hazard.

8.2 Asphalt Recycling/Thermal Treatment

The petroleum components of the soil allow this material to be recycled through the production of asphalt products. State regulations in Rhode Island and Massachusetts limits the use of waste products to spill residues from virgin petroleum products. Waste oil products cannot be treated in either of these states. Both New Hampshire and Maine have asphalt facilities with the ability to accept waste oil contaminated soil. Thermal Treatment is used by some asphalt recycling facilities as pretreatment to reduce the volatile components in oil contaminated soil to acceptable levels for landfilling or asphalt recycling. The disposal criteria for these types of treatment methods are listed below. PCB contamination may also prevent the use of these types of facilities. The cost of these types of disposal outlets may be higher than land disposal. Future liability by the these methods are reduces by treatment that reduces hazardous constituents.

8.3 Secure Chemical Landfill

RCRA/TSCA regulated soils will be disposed of at a Subtitle C landfill. These landfills are used for waste with higher hazardous than a Subtitle D landfill. Their disposal criteria are generally much higher and should be able to accept and soil that cannot go to the options listed above. There are no Subtitle C landfills in New England, the closest being in western New York. The costs this type of landfill are higher than the other disposal methods due to; 1. Increased operating costs because the increased hazard of the waste; 2. Increased transportation costs. The future liability of these landfills are similar to that of Subtitle D landfills. The other disposal option for this type of material would be High Temperature, which is not discussed here due to extremely high costs.

Initial disposal sites selections will be based on matching previously conducted analytical results with disposal site requirements.

The estimated volume of soil to be disposed of at the Melville North Landfill is as follows:

Non RCRA regulated soil suitable for Subtitle D Landfill or Asphalt Recycling/Thermal Treatment;	4,110 cubic yards
RCRA regulated hazardous waste soil suitable for Subtitle C Secure Chemical Landfill;	10 cubic yards

8.4 Work Plan

As the soil is excavated and stockpiled, OHM will collect representative samples and conduct any additional analysis based on the frequency and parameters required by the proposed disposal facility, see Table 1.

OHM's T & D Coordinator will review the analytical data to confirm acceptability to the proposed disposed facility. If the analytical results exceed the proposed disposal sites acceptance criteria, other disposal recommendations will be submitted to the generator. If the results will meet the disposal sites criteria, the T & D Coordinator will prepare the paperwork required for disposal site approval and forward them to the generator for review and signature. All required waste profile sheets, analytical results and representative samples will be sent to the disposal site for final approval.

Draft shipping manifests or bills of lading will be prepared for generator review. When the waste stream has been approved by the disposal site, the T & D Coordinator will arrange for transportation to the disposal site.

The T & D Coordinator will prepare the shipping documents or review the shipping documents if prepared by the disposal vendor, and submit to the generator for signature.

The shipping documents will be tracked by the T & D Coordinator and a final disposal report will be generated.

Off Site Treatment/ sal Site Overview

Facility Name and Location	Description of Treatment and Company Information	Required Analyses/Frequency	Acceptance Limits	Estimated Pricing
Aggregate Recycling Corp Norridgewock, ME	Soil Treatment and asphalt batching. Facility uses a portable asphalt batcher to thermally treat and stabilize petroleum contaminated soils.	Total Petroleum Hydrocarbon 8240 VOA Flashpoint PCB's pH Full TCLP Paint Filter Test Sulfide/Cyanide Reactivity 1 sample per 167 cu yd	Acceptance of material dependent on facility review and approval Acceptance Limits: TCLP-< 50% of RCRA limits TOX-<1,000 ppm PCB's < 50 ppm dry weight Flashpoint >140 F	$98.00/cu yd disposal $63.00/cu yd transportation
Phoenix Soil Inc. Waterbury, CT	Thermal Treatment of petroleum contaminated soil followed by disposal/sale of treated soil.	Total Petroleum Hydrocarbon VOCs Flashpoint PCB's Full TCLP Paint Filter Test 3 composite samples per 100 cu yd	TPH-< 100,000 ppm Total Halogens <1,000 ppm Flash > 140 F PCBs <25 PPM	$90.00/cu yd disposal no vendor transportation
New Milford Landfill New Milford, CT	Land disposal. Disposal approval must be obtained from the CT DEP	Total Petroleum Hydrocarbon 8010, 8015, and 8020 VOC's Flashpoint PCB's pH Full TCLP Paint Filter Test	dependent on CT DEP and disposal site approval.	$98.00/cu yd disposal no vendor transportation
CWM Chemical Services Model City, NY	Secure chemical landfill of RCRA and TSCA waste.	Representative sample and waste profile form are generally required.	Acceptance of matrial is dependent on facility review and approval.	$150.00/cu yd disposal $80.00/cu yd transportation

notes: 1. The above listing is an example of the disposal facilities and options available and is not ment to be all inclusive. Additional facilities that can be economically utilized exist.

2. The approximate pricing costs are estimates only. Actual costs wil be based on the volume of material to be shipped, density of the soil and disposal site approval results.

TABLES

TABLE 1-1

LIST OF SPECIFICATIONS

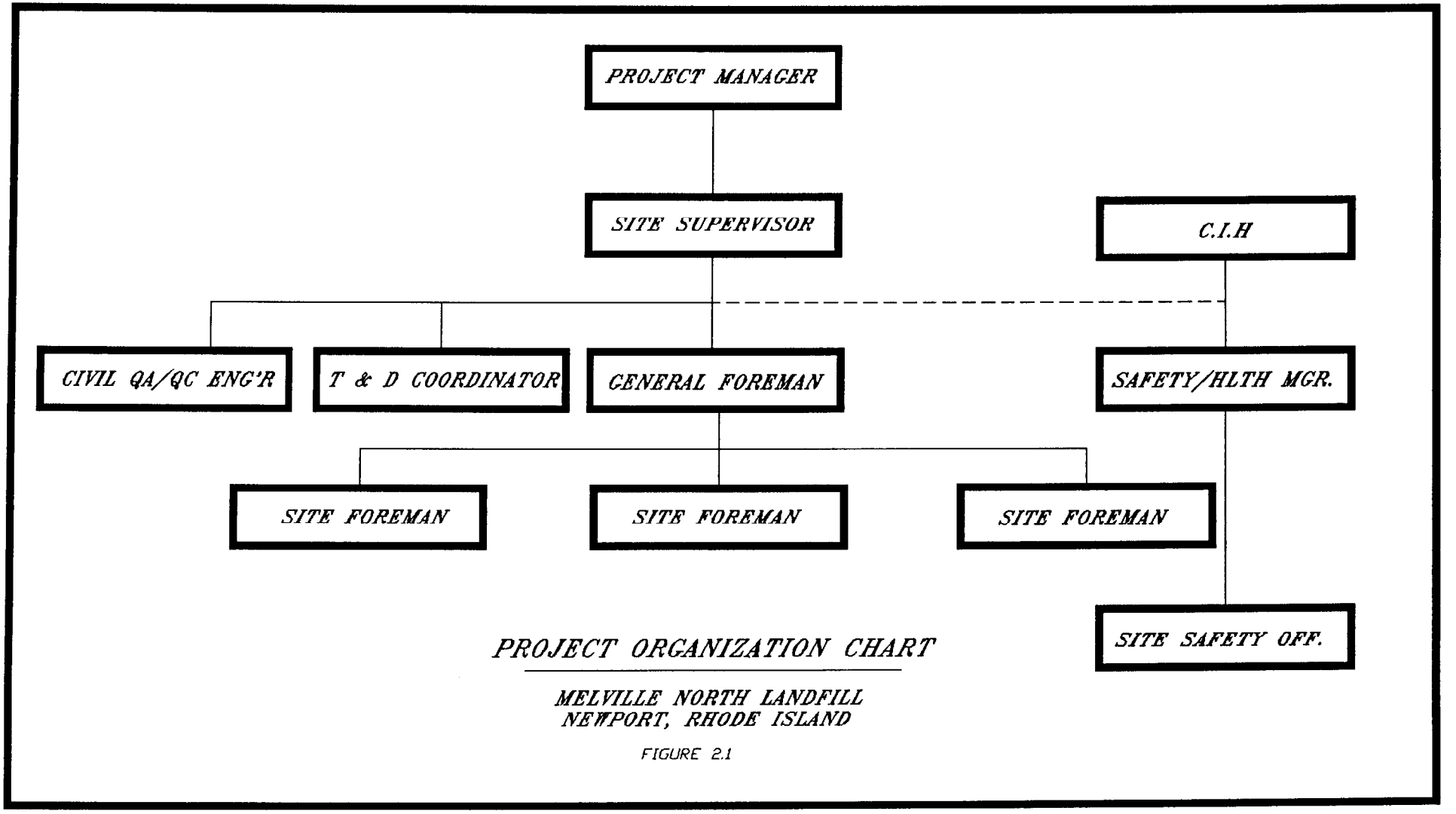
Section No.	*Title*
01010	General Paragraphs
01011	Additional General Paragraphs
01090	References
01300	Submittals
01400	Quality Control
01560	Environmental Protection
02040	Health, Safety, and Emergency Response
02102	Clearing and Grubbing
02220	General Excavation, Filling, and Backfilling
02990	Hazardous Materials Management
02995	Health, Safety, and Emergency Response

TABLE 1-2

LIST OF DRAWINGS

Drawing No.	*Title*
T-1	Title Sheet, Index and Location Plan
C-1	Existing Conditions, Demolition, and Site Preparation
C-2	General Site Plan
C-3	Final Grading Plan
C-4	General Site Details
B-1	Soil Boring Logs
B-2	Soil Boring Logs

FIGURES



PROJECT ORGANIZATION CHART

MELVILLE NORTH LANDFILL
NEWPORT, RHODE ISLAND

FIGURE 2.1

HEALTH AND SAFETY PLAN
FOR
MELVILLE NORTH LANDFILL
NAVAL EDUCATION AND TRAINING CENTER
NEWPORT, RHODE ISLAND

Prepared for:

DEPARTMENT OF THE NAVY
Contract No. N62470-93-D-3032
Delivery Order 0025

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March 14, 1995
OHM Project 16143HS

OHM Remediation Services Corp.
A Subsidiary of OHM Corporation

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1.0 INTRODUCTION

This Health and Safety Plan (HASP) has been developed for United States Navy, LANTDIV, Delivery Order entitled Melville North Landfill, Naval Education and Training Center, Newport RI. The Delivery Order will be executed per the requirements stated in the Final Statement of Work (SOW) for Service Delivery Order per Contract No. N62470-93-D-3032, Delivery Order 0025, in cooperation with the Navy. This Delivery Order will also be executed in accordance with Naval Facilities Engineering Command (NAVFAC).

This HASP documents the policies and procedures which protect workers and the public from potential hazards posed by work at this site. OHM considers safety the highest priority during work at a site containing potentially hazardous materials and has established a goal of zero accidents for all projects. All projects will be conducted in a manner which minimizes the probability of injury, accident, or incident occurrence. This HASP is a key element in the proper planning of project work which is necessary to assure the goal of zero accidents. The HASP Acknowledgment (Appendix A) will be signed by all who actively participate at this project.

Although the plan focuses on the specific work activities planned for this site, it must remain flexible because of the nature of this work. Conditions may change and unforeseen situations may arise that require deviations from the original plan. This flexibility allows modification by the OHM supervisors and health and safety officials with approval from the project CIH.

1.1 SITE HISTORY/BACKGROUND

The Melville North Landfill is located on privately owned property at the northern end of the Newport Naval Base. The site is approximately eight acres in size and is situated between Defense Highway and Narragansett Bay. The Penn Central Railroad tracks run along the eastern side of the former landfill site. The railroad tracks are oriented in an approximate north-south direction. Access to the site is off of Defense Highway through a gate and along a paved entrance way. The paved entrance way leads approximately 180 feet down a small hill and across the railroad tracks to the site.

In general, the site is relatively flat across the central to northern portions. In the southern portion of the site, a slight ridge runs along the eastern half of the site. Ground elevations across the main portion of the site vary between approximately 10 and 20 feet above mean sea level. Along the western edge of the site, the grade of the site is nearly level with the shoreline of Narragansett Bay. The site is vegetated with grass, weeds, and some small trees. A strip of small trees is present along the edge of the bay in the west-central portion of the site. A small, more densely wooded area is present along the edge of the bay in the southern portion of the site. Just off of the site, a small wooded area is also present along the central to southern edge of the site, between the site and Defense Highway.

The Melville North site was used as a landfill for at least the period following World War II until 1955. The Melville North Landfill wastes reportedly included soil and construction debris intermixed with spent acids, waste paints, solvent waste oil (diesel fuel, lube) and PCBs. The quantity of these wastes disposed of in the landfill is unknown.

1.2 SCOPE OF WORK

These activities have been analyzed for potential hazards for which hazard control measures are provided in Section 3.4 Activity Hazard Analysis:

- Site Preparation
- Clearing and Grubbing
- Install Sediment Control Devices
- Strip Topsoil/Remove Gravel Roadway
- Excavation
- Backfilling
- Re-vegetation of Disturbed Areas
- Restoration of Gravel Road

Figure 1.1, Site Map

2.0 KEY PERSONNEL AND MANAGEMENT

The Project Manager (PM), Site Supervisor (SS), Certified Industrial Hygienist (CIH) and Site Safety Officer (SSO) are responsible for formulating and enforcing health and safety requirements, and implementing the HASP. Reporting relationships are shown in Figure 2.1

2.1 PROJECT MANAGER (PM)

The PM has the overall responsibility for the project and to assure that the goals of the construction remedial action are attained in a manner consistent with the HASP requirements. The PM will coordinate with the SS and the SSO to assure that the remedial action goals are completed in a manner consistent with the HASP. The PM will conduct a monthly health and safety audit of the project using the Management Health and Safety Report Form. The PM reports to the Program Manager.

2.2 SITE SUPERVISOR (SS)

The SS is responsible for field implementation of the HASP. The SS will be the main contact in any on-site emergency situation. The SS will conduct periodic inspection of the work site to confirm compliance with all health and safety requirements. The SS is also responsible for coordinating remedial actions for all deficiencies and for enforcing the OHM "Cardinal Safety Rules". The SS reports to the Project Manager.

2.3 SITE SAFETY OFFICER (SSO)

The SSO has responsibility for administering the HASP relative to site activities, and will be in the field full-time while site activities are in progress. The SSO's primary operational responsibilities include personal and environmental monitoring, coordination of job safety analyses, personal protective equipment maintenance, and assignment of protection levels. The SSO will direct all field activities involved with safety and is authorized to stop work when an imminent health or safety risk exists. The SSO is responsible for assuring that all on-site personnel understand all safety requirements. The SSO reports jointly to the CIH and the Project Manager.

2.4 CERTIFIED INDUSTRIAL HYGIENIST (CIH)

The CIH is responsible for the contents of the HASP and will ensure that the HASP complies with all federal, state and local health and safety requirements. If necessary, the CIH can modify specific aspect of the HASP to adjust for on-site changes that affect safety. The CIH will coordinate with the SSO on all modifications to the HASP and will be available for consultation when required. The CIH will not necessarily be on site during OHM activities. The CIH reports to the Regional Vice President / General Manager and the Program Manager.

2.5 EMPLOYEE SAFETY RESPONSIBILITY

Each employee is responsible for personal safety as well as the safety of others in the area. The employee will use all equipment provided in a safe and responsible manner as directed by the SS. All OHM personnel will follow the policies set forth in the OHM Health and Safety Procedures Manual, with particular emphasis on the OHM "Cardinal Safety Rules." A copy of this manual will be kept on site for reference.

2.6 KEY SAFETY PERSONNEL

The following individuals share responsibility for health and safety at the site.

Project Manager	William L. Snow, P.E. (508) 435-9561 (office)
Site Supervisor	Brad Coats (site phone)
Site Safety Officer	TBD (site phone)
Program Manager for LANTDIV	George Krauter, P.E. 609-588-6477 (office)
ER Health and Safety Director/Project CIH	Kevin McMahon, M.S., CIH 609-588-6375 (office) 609-421-7523 (pager)
Vice President, Health and Safety	Fred Halvorsen, Ph.D., PE, CIH 800-231-7031

Figure 2.1
Health and Safety Organization

3.0 JOB HAZARD ANALYSIS

This section outlines the potential chemical and physical hazards which workers may be exposed to during work on this project. Table 3.1 lists significant contaminant identified at the site. An MSDS list is included in Appendix C.

3.1 CHEMICAL HAZARDS

3.1 CHEMICAL HAZARDS

CHEMICAL	EXPOSURE ROUTES	PEL/TLV	HEALTH HAZARDS/ PHYSICAL HAZARDS
Trimethyl-benzene	Inhalation, skin, ingestion, eyes	25 ppm	Skin and eye irritant; may cause central nervous system depression, anemia, bronchitis.
			Flammable when exposed to heat, flame, and oxidizers; emits acrid smoke and fumes when heated to decomposition
Xylene	Inhalation, skin, ingestion, eyes	100 ppm	Dizziness, excitement, drowsiness, lack of coordination, staggered gait; irritation of eyes, nose and throat; corneal vacuolization; anorexia, nausea, vomiting, abdominal pain; dermatitis.
			Flammable liquid; keep away from strong oxidizers.
Particulate Polynuclear Aromatic Hydrocarbons	Inhalation, skin, ingestion	0.1 mg/m^3	Carcinogen; dermatitis; bronchitis.
Arsenic	Inhalation, ingestion	0.2 mg/m^3	Carcinogen, ulceration of nasal septum, dermatitis, GI disturbances, peripheral neuropathy, respiratory irritation, hyperpigmentation of skin.
Lead	Inhalation, ingestion	0.15 mg/m^3	Weakness, lassitude, insomnia; facial pallor; anorexia, weight loss, malnutrition, constipation, abdominal pain, anemia; gingival lead lines; tremors; paralysis of wrist, ankles; encephalopathy; nephropathy; eye irritation; hypotension.

3.1 CHEMICAL HAZARDS			
CHEMICAL	EXPOSURE ROUTES	PEL/TLV	HEALTH HAZARDS/ PHYSICAL HAZARDS
Copper	Inhalation, ingestion	0.2 mg/m^3	Irritated nasal mucous membrane, pharynx; nasal perforation; eye irritation; metallic taste; dermatitis.
Zinc	Inhalation, ingestion,	10 mg/m^3	Sweet metallic taste; dry throat, cough; chills, fever; tight chest, dyspnea, reduced pulmonary function; headaches; blurred vision; muscle cramps, lower back pain; nausea, vomiting; fatigue, lassitude, malaise.

The following general symptoms may indicate exposure to a hazardous material. Personnel will be removed from the work site and provided proper medical attention immediately if the following symptoms occur:

- Dizziness or stupor
- Nausea, headaches, or cramps
- Irritation of the eyes, nose, or throat
- Euphoria
- Chest pains and coughing
- Rashes or burns

3.2 PHYSICAL HAZARDS

To minimize physical hazards, OHM has developed standard safety protocols which will be followed at all times. Failure to follow safety protocols will result in expulsion of an employee from the site and appropriate disciplinary actions.

The SS and SSO will observe the general work practices of each crew member and equipment operator, and enforce safe procedures to minimize physical hazards. Hard hats, safety glasses, and steel-toe safety boots are required in all areas of the site. Site-specific hazards and all necessary precautions will be discussed at the daily safety meetings. The Health and Safety Procedures Manual for LANTDIV will be maintained at the project site as a reference document.

3.3 ENVIRONMENTAL HAZARDS

Environmental factors such as weather, wild animals, insects, and irritant plants pose a hazard when performing outdoor work. The SSO and SS will take all necessary measures to alleviate these hazards should they arise.

3.3.1 Heat Stress

The combination of warm ambient temperature and protective clothing result in the potential for heat stress. Heat stress disorders include:

- Heat rash
- Heat cramps
- Heat exhaustion
- Heat stroke

Heat stress prevention is outlined in procedure No. 22 of the OHM Corp. LANTDIV Health and Safety Procedures manual. This information will be reviewed during safety meetings. Workers will be encouraged to increase consumption of water and electrolyte-containing beverages eg. Gatorade.

It is recommended that workers break approximately every 2 hours for 10 to 15 minute rest periods when temperatures rise above 72.5 degrees F. and protective clothing is worn. In addition, workers are encouraged to take rests whenever they feel any adverse effects that may be heat-related. The frequency of breaks may need to be increased upon worker recommendation to the SSO and SS. Heat stress can be prevented by assuring an adequate work/rest schedule; guidelines are printed below.

AMBIENT TEMPERATURE	NO CHEMICAL PROTECTIVE CLOTHING (LEVEL D PPE)	CHEMICAL PROTECTIVE CLOTHING (D+/C/B/A)
90° F or above	After 45 minutes of work	After 15 minutes of work
87.5 F-90 F	After 60 minutes of work	After 30 minutes of work
82.5-87.5 F	After 90 minutes of work	After 60 minutes of work
77.5-82.5 F	After 120 minutes of work	After 90 minutes of work
72.5-77.5 F	After 150 minutes of work	After 120 minutes of work

The work/rest schedule can be calculated based on heat stress monitoring results. Monitoring consists of taking the radial pulse of a worker for 30 seconds immediately after exiting the work area. The frequency of monitoring is provided herein.

If the heart rate exceeds 110 beats per minute at the beginning of the rest period, shorten the next work cycle by 1/3 and keep the rest period the same. If the heart rate still exceeds 110 beats per minute at the next rest period, increase the following rest period by 1/3. The initial rest period should be at least 10 minutes.

Monitoring for heat stress will begin when the ambient temperature reaches or exceeds 70 degrees Fahrenheit when wearing chemical protective clothing, or 80 degrees Fahrenheit for site activities performed with no chemical protective clothing (Level D). Monitoring will include pulse rate, weight loss, oral temperature and signs and symptoms of heat stress. See Procedure 22 LANTDIV Health and Safety Procedures Manual.

3.3.3 Biological Hazards

- POISON IVY (Rhus Radicans)

  Poison Ivy may be found at the site. It is highly recommended that all personnel entering into an area with poison ivy wear a minimum of a tyvek coverall, to avoid skin contact.

  The majority of skin reactions following contact with offending plants are allergic in nature and characterized by:

  - General symptoms of headache and fever
  - Itching
  - Redness
  - A rash

  Some of the most common and most severe allergic reactions result from contact with plants of the poison ivy group, including poison oak and poison sumac. Such plants produce severe rash characterized by redness, blisters, swelling, and intense burning and itching. The victim may develop a high fever and feel very ill. Ordinarily, the rash begins within a few hours after exposure, but may be delayed 24 to 48 hours.

  Distinguishing Features of Poison Ivy Group Plants

  The most distinctive features of poison ivy and poison oak are their leaves, which are composed of three leaflets each. Both plants have greenish-white flowers and berries that grow in clusters.

  First Aid

  a. Remove contaminated clothing; wash all exposed areas thoroughly with soap and water, followed by rubbing alcohol.
  b. Apply calamine or other soothing lotion if rash is mild.
  c. Seek medical advice if a severe reaction occurs, or if there is a known history of previous sensitivity.

- TICKS

  Heavily vegetated areas of a site may have ticks. It is highly recommended that all personnel walking through such areas wear a tyvek coverall and latex boot covers taped at all joints. The ticks will stand out against the light colors. A tick or insect repellent containing DEET is recommended.

Ticks can transmit several diseases, including Rocky Mountain spotted fever, a disease that occurs in the eastern portion of the United States as well as the western portion, and Lyme disease. Ticks adhere tenaciously to the skin or scalp . There is some evidence that the longer an infected tick remains attached, the greater is the chance that it will transmit disease.

First Aid

a. Carefully (slowly and gently) remove the tick with tweezers, taking care that all parts are removed.

b. With soap and water, thoroughly, but gently, scrub the area from which the tick has been removed, because disease germs may be present on the skin; also wipe the bite area with an antiseptic.

c. If you have been bitten, place the tick in a jar labeled with the date, location of the bite, and the location acquired. If any symptom appears, such as an expanding red rash, contact a physician immediately.

- LYME DISEASE

Lyme disease may cause a number of medical conditions, including arthritis, that can be treated if you recognize the symptoms early and see your doctor. Early signs may include a flu-like illness, an expanding skin rash and joint pain. If left untreated, Lyme disease can cause serious nerve and heart problems as well as a disabling type of arthritis.

You are more likely to spot early signs of Lyme disease rather than see the tick or its bite. This is because the tick is so small (about the size of the head of a common pin or a period on this page and a little larger after they fill with blood), you may miss it or signs of a bite. However, it is also easy to miss the early symptoms of Lyme disease.

In its early stage, Lyme disease may be a mild illness with symptoms like the flu. It can include a stiff neck, chills, fever, sore throat, headache, fatigue, and joint pain. But this flu-like illness is usually out of season, commonly happening between May and October when ticks bite.

Most people develop a large, expanding skin rash around the area of the bite. Some people may get more than one rash. The rash may feel hot to the touch and may be painful. Rashes vary in size, shape, and color, but often look like a red ring with a clear center. The outer edges expand in size. Its easy to miss the rash and the connection between the rash and the tick bite. The rash develops from three days to as long as a month after the tick bite. Almost one third of those with Lyme disease never get the rash.

Joint or muscle pain may be another early sign of Lyme disease. These aches and pains may be easy to confuse with the pain that comes from other types of arthritis. However, unlike many other types of arthritis, this pain seems to move or travel from joint to joint.

In later stages, Lyme disease may be confused with other medical problems. These problems can develop months to years after the first tick bite.

Early treatment of Lyme disease symptoms with antibiotics can prevent the more serious medical problems of later stages. If you suspect that you have symptoms of Lime disease, contact your doctor.

Lyme disease can cause problems with the nervous system that look like other diseases. These include symptoms of stiff neck, severe headache, and fatigue usually linked to meningitis. They may also include pain and drooping of the muscles on the face, called Bell's Palsy. Lyme disease can also mimic symptoms of multiple sclerosis or other types of paralysis.

Lyme disease can also cause serious but reversible heart problems, such as irregular heart beat. Finally, Lyme disease can result in a disabling, chronic type of arthritis that most often affects the knees. Treatment is more difficult and less successful in later stages. Researchers think these more serious problems may be linked to how the body's defence or immune system responds to the infection.

3.3.4 Noise

Hearing protection is required for workers operating or working near heavy equipment, where the noise level is greater than 85 dbA (TWA) as well as personnel working around heavy equipment. The SSO will determine the need for and appropriate testing procedures, i.e., sound level meter and/or dosimeter for noise measurement.

ACTIVITY HAZARD ANALYSIS FOR SITE PREPARATION		
TASK BREAKDOWN	POTENTIAL HAZARDS	HAZARD CONTROL MEASURES
Clearing/ Grubbing/	Struck By/ Against Heavy Equipment	• Use reflective warning vests worn when exposed to vehicular traffic • Avoid equipment swing areas • Make eye contact with operators before approaching equipment • Understand and review hand signals
	Slips, Trips, Falls	• Clear, walkways of equipment, tools, vegetation, excavated material, and debris • Mark, identify, or barricade other obstructions
	Handling Heavy Objects	• Observe proper lifting techniques • Obey sensible lifting limits (60 lb. maximum per person manual lifting) • Use mechanical lifting equipment (hand carts, trucks) to move large, awkward loads
	Sharp Objects	• Wear cut resistant work gloves when the possibility of lacerations or other injury may be caused by sharp edges or objects • Maintain all hand and power tools in a safe condition • Keep guards in place during use
	Insect/ Snake Bites	• Review injury potential and types of snakes with workers • Avoid insect nests areas, likely habitats of snakes outside work areas • Emphasize The Buddy System where such injury potential exists • Use insect repellant, wear PPE to protect against sting/bite injuries
	Contact Dermatitis	• Wear PPE to avoid skin contact with contaminated soil, plants, or other skin irritants • Identify and review poisonous plants with workers
	High Noise Levels	• Use hearing protection when exposed to excessive noise levels (greater than 85 dBA over an 8-hour work period)
	High/Low Ambient Temperature	• Monitor for Heat/Cold stress in accordance with OHM Health and Safety Procedures Manual

ACTIVITY HAZARD ANALYSIS FOR SITE PREPARATION		
TASK BREAKDOWN	POTENTIAL HAZARDS	HAZARD CONTROL MEASURES
Grading (Continued)	Struck By/ Against Heavy Equipment	• Use reflective warning vests worn when exposed to vehicular traffic • Avoid equipment swing areas • Make eye contact with operators before approaching equipment • Understand and review hand signals
	Sharp Objects	• Wear cut resistant work gloves when the possibility of lacerations or other injury may be caused by sharp edges or objects • Maintain all hand and power tools in a safe condition • Keep guards in place during use
	Insect/ Snake Bites	• Review injury potential and types of snakes with workers • Avoid insect nests areas, likely habitats of snakes outside work areas • Emphasize The Buddy System where such injury potential exists • Use insect repellant, wear PPE to protect against sting/bite injuries.
	Contact Dermatitis	• Wear PPE to avoid skin contact with contaminated soil, plants, or other skin irritants • Identify and review poisonous plants with workers
	High Noise Levels	• Use hearing protection when exposed to excessive noise levels (greater than 85 dBA over an 8-hour work period)
	High/Low Ambient Temperature	• Monitor for Heat/Cold stress in accordance with OHM Health and Safety Procedures Manual
Equipment/ Facility Set-up	Slips, Trips, Falls	• Clear walkways work areas of equipment, tools, vegetation, excavated material and debris • Mark, identify, or barricade other obstructions
	Handling Heavy Objects	• Observe proper lifting techniques • Obey sensible lifting limits (60 lb. maximum per person manual lifting) • Use mechanical lifting equipment (hand carts, trucks) to move large, awkward loads

ACTIVITY HAZARD ANALYSIS FOR SITE PREPARATION		
TASK BREAKDOWN	POTENTIAL HAZARDS	HAZARD CONTROL MEASURES
Equipment Facility Set-Up (Continued)	Sharp Objects	• Wear cut resistant work gloves when the possibility of lacerations or other injury may be caused by sharp edges or objects • Maintain all hand and power tools in a safe condition • Keep guards in place during use
	High Noise Levels	• Use hearing protection when exposed to excessive noise levels (greater than 85 dBA over an 8-hour work period)
	High/Low Ambient Temperature	• Monitor for Heat/Cold stress in accordance with OHM Health and Safety Procedures Manual

ACTIVITY HAZARD ANALYSIS FOR SOIL EXCAVATION		
TASK BREAKDOWN	POTENTIAL HAZARDS	HAZARD CONTROL MEASURES
Clearing/ Grubbing/	Struck By/ Against Heavy Equipment	• Use reflective warning vests worn when exposed to vehicular traffic • Avoid equipment swing areas • Make eye contact with operators before approaching equipment • Understand and review hand signals
	Slips, Trips, Falls	• Clear, walkways of equipment, vegetation, excavated material, tools and debris • Mark, identify, or barricade other obstructions
	Handling Heavy Objects	• Observe proper lifting techniques • Obey sensible lifting limits (60 lb. maximum per person manual lifting) • Use mechanical lifting equipment (hand carts, trucks) to move large, awkward loads
	Sharp Objects	• Wear cut resistant work gloves when the possibility of lacerations or other injury may be caused by sharp edges or objects • Maintain all hand and power tools in a safe condition • Keep guards in place during use
	Insect/ Snake Bites	• Review injury potential and types of snakes with workers • Avoid insect nests areas, likely habitats of snakes outside work areas • Emphasize "Buddy System" where such injury potential exists • Use insect repellant, wear PPE to protect against sting/bite injuries.
	Contact Dermatitis	• Wear PPE to avoid skin contact with contaminated soil, plants, or other skin irritants • Identify and review poisonous plants with workers
	High Noise Levels	• Use hearing protection when exposed to excessive noise levels (greater than 85 dBA over an 8-hour work period)
	High/Low Ambient Temperature	• Monitor for Heat/Cold stress in accordance with OHM Health and Safety Procedures Manual

ACTIVITY HAZARD ANALYSIS FOR SOIL EXCAVATION		
TASK BREAKDOWN	POTENTIAL HAZARDS	HAZARD CONTROL MEASURES
Excavation of Soil	Underground Utilities	• Identify all underground utilities around the excavation site before work commences • Cease work immediately if unknown utility markers are uncovered
	Struck By/ Against Heavy Equipment	• Use reflective warning vests when exposed to vehicular traffic • Avoid equipment swing areas • Make eye contact with operators before approaching equipment • Understand and review hand signals
	Sharp Objects	• Wear cut resistant work gloves when the possibility of lacerations or other injury may be caused by sharp edges or objects • Maintain all hand and power tools in a safe condition • Keep guards in place during use
	High Noise Levels	• Use hearing protection when exposed to excessive noise levels (greater than 85 dBA over an 8-hour work period)
Excavation of Soil	Excavation Wall Collapse	• Construct diversion ditches or dikes to prevent surface water from entering excavation • Provide good drainage of area adjacent to excavation • Collect ground water/rain water from excavation and dispose of properly • Store excavated material at least 2 feet from the edge of the excavation; prevent excessive loading of the excavation face • Provide sufficient stairs, ladders, or ramps when workers enter excavations over 4 feet in depth • Place ladders no more than 25 feet apart laterally • Treat excavations over 4 feet deep as confined spaces • Complete confined space permit entry procedure • Monitor atmosphere for flammable/toxic vapors, and oxygen deficiency • Slope, bench, shore, or sheet excavations over 5 feet deep if worker entry is required • Assign a competent person to inspect, decide soil classification, proper sloping, the correct shoring, or sheeting • Inspect excavations (when personnel entry is required) daily, any time conditions change • Provide at least two means of exit for personnel working in excavations

ACTIVITY HAZARD ANALYSIS FOR SOIL EXCAVATION		
TASK BREAKDOWN	POTENTIAL HAZARDS	HAZARD CONTROL MEASURES
Excavation of Soil (Continued)	Slips, Trips, Falls	• Clear walkways, work areas of equipment, vegetation, excavated material, tools, and debris • Mark, identify, or barricade other obstructions
	Handling Heavy Objects	• Observe proper lifting techniques • Obey sensible lifting limits (60 lb. maximum per person manual lifting) • Use mechanical lifting equipment (hand carts, trucks) to move large, awkward loads
	Inhalation and Contact with Hazardous Substances	• Provide workers proper skin, eye and respiratory protection based on the exposure hazards present. • Review contaminant chemical MSDSs with workers before operations begin • Dampen soil using light water spray to prevent fugitive dust emisions • Cover stockpiled soil with plastic sheeting to prevent fugitive dust emissions
	High/Low Ambient Temperature	• Monitor for Heat/Cold stress in accordance with OHM Health and Safety Procedures Manual
Backfilling	Slips, Trips, Falls	• Clear walkways, work areas of equipment, vegetation, excavated material, tools, and debris • Mark, identify, or barricade other obstructions
	Struck By/ Against Heavy Equipment	• Use reflective warning vests worn when exposed to vehicular traffic • Avoid equipment swing areas • Make eye contact with operators before approaching equipment • Understand and review hand signals
	Sharp Objects	• Wear cut resistant work gloves when the possibility of lacerations or other injury may be caused by sharp edges or objects • Maintain all hand and power tools in a safe condition • Keep guards in place during use

4.0 WORK AND SUPPORT AREAS

To prevent migration of contamination caused through tracking by personnel or equipment, work areas and personal protective equipment will be clearly specified prior to beginning operations. OHM has designated work areas or zones as suggested by the NIOSH/OSHA/USCG/EPA'S document titled, "Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities." Each work area will be divided into three zones as follows:

- An Exclusion or "Hot" Zone (EZ)
- A Contamination Reduction Zone (CRZ)
- A Support Zone (SZ)

4.1 EXCLUSION ZONE

The EZ is the area suspected of contamination and presents the greatest potential for worker exposure. Personnel entering the area must wear the mandated level of protection for that area. In certain instances, different levels of protection will be required depending on the tasks and monitoring performed within that zone. The EZ for this is indicated in Figure 1.1, Site Map.

4.2 CONTAMINATION REDUCTION ZONE

The CRZ or transition zone will be established between the EZ and SZ. In this area, personnel will begin the sequential decontamination process required to exit the EZ. To prevent off-site migration of contamination and for personnel accountability, all personnel will enter and exit the EZ through the CRZ. The CRZ for this project is indicated in Figure 1, Site Map.

4.3 SUPPORT ZONE

The SZ serves as a clean, control area. Operational support facilities are located within the SZ. Normal work clothing and support equipment are appropriate in this zone. Contaminated equipment, or clothing will not be allowed in the SZ. The support facilities should be located upwind of site activities. There will be a clearly marked controlled access point from the SZ into the CRZ and EZ that is monitored closely by the SSO and the SS to ensure proper safety protocols are followed. The SZ is indicated in Figure 1, Site Map.

4.4 SITE CONTROL LOG

A log of all personnel visiting, entering or working on the site shall be maintained in the main office trailer location. The log will record the date, name, company or agency, and time entering or exiting the site.

No visitor will be allowed in the EZ without showing proof of training and medical certification. Visitors will supply their own boots and respiratory equipment, if required. Visitors will attend a site orientation given by the SSO and sign the HASP.

4.5 GENERAL

The following items are requirements to protect the health and safety of workers and will be discussed in the safety briefing prior to initiating work on the site.

- Eating, drinking, chewing gum or tobacco, smoking, or any practice that increases the probability of hand to mouth transfer and ingestion of contamination is prohibited in the EZ and CRZs.
- Hands and face must be washed upon leaving the EZ and before eating, drinking, chewing gum or tobacco and smoking or other activities which may result in ingestion of contamination.
- A buddy system will be used. Hand signals will be established to maintain communication.
- During site operations, each worker will consider himself as a safety backup to his partner. Off-site personnel provide emergency assistance. All personnel will be aware of dangerous situations that may develop.
- Visual contact will be maintained between buddies on site when performing hazardous duties.
- No personnel will be admitted to the site without the proper safety equipment, training, and medical surveillance certification.
- All personnel must comply with established safety procedures. Any staff member who does not comply with safety policy, as established by the SSO or the SS, will be immediately dismissed from the site.
- Proper decontamination procedures must be followed before leaving the site.
- All employees and visitors must sign in and out of the site.

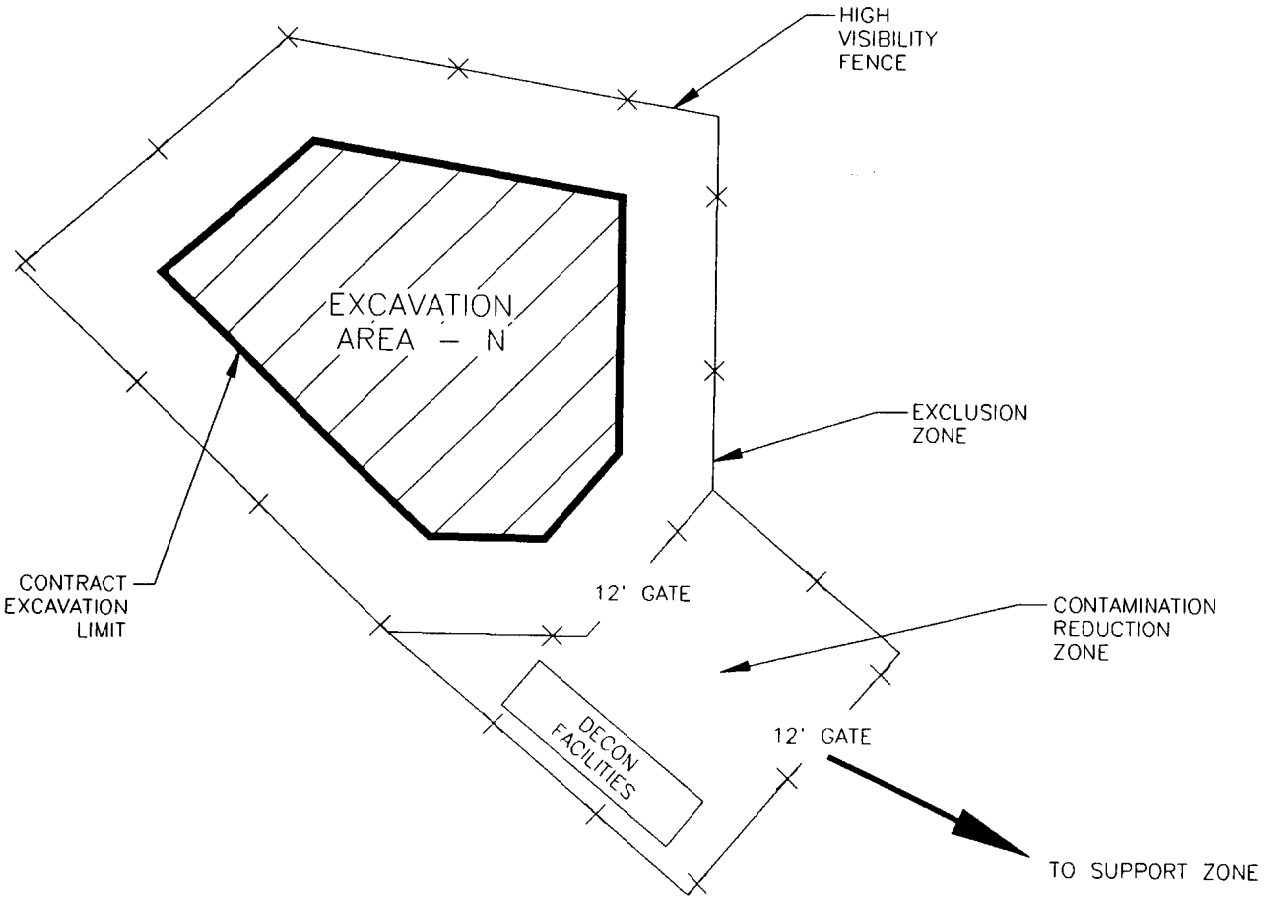


FIGURE 1
WORK ZONES

MELVILLE NORTH LANDFILL
NAVAL EDUCATION & TRNG CENTER
NEWPORT, RHODE ISLAND

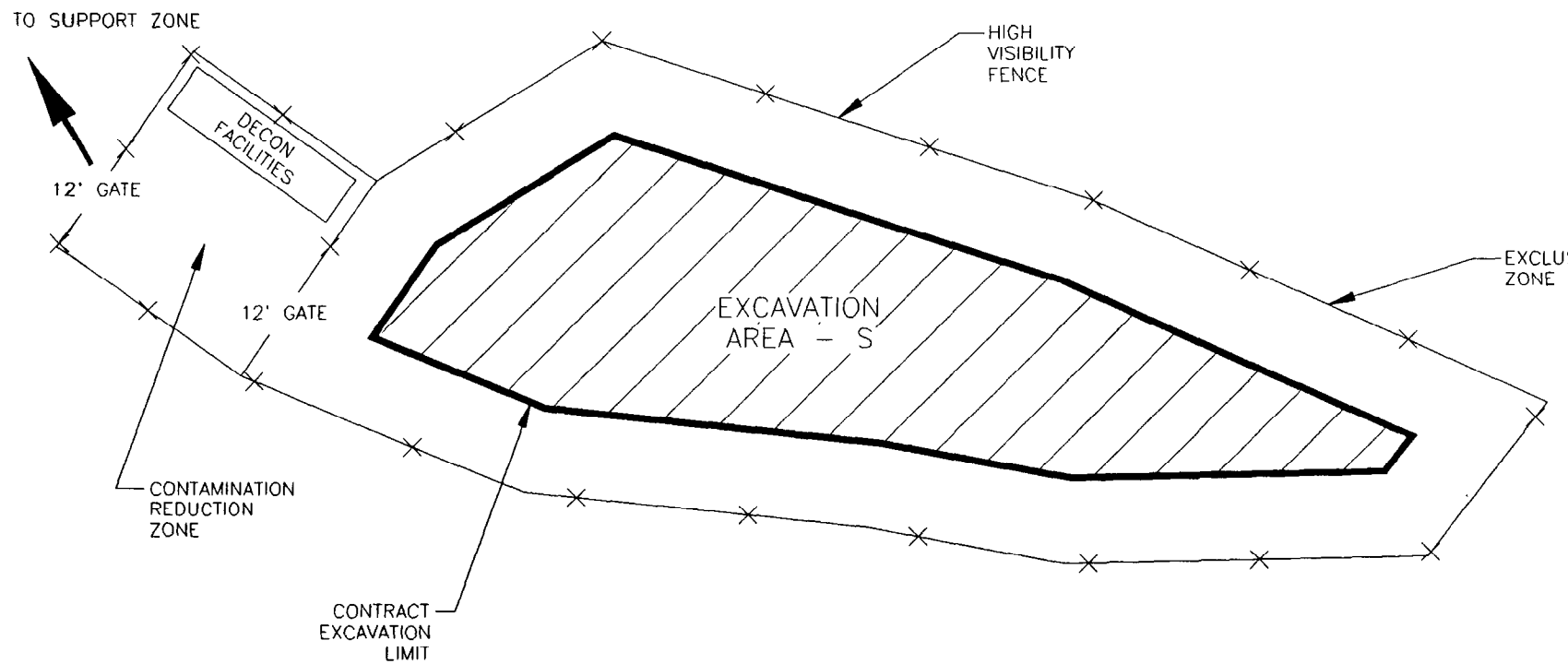


FIGURE 2
WORK ZONES

MELVILLE NORTH LANDFILL
NAVAL EDUCATION & TRNG CENTER
NEWPORT, RHODE ISLAND

5.0 PROTECTIVE EQUIPMENT

This section addresses the various levels of personal protective equipment (PPE) which are or may be required at this job site. OHM personnel are trained in the use of all PPE utilized.

5.1 ANTICIPATED PROTECTION LEVELS

TASK	PROTECTION LEVEL	COMMENTS/MODIFICATIONS
Site Preparation	D	
Clearing and Grubbing	D	Use protective chaps, face shield and hearing protection when operating a chain saw; use a face shield when operating a "weed-wacker"; long-sleeved shirts required
Install sediment control devices	D	Wear hooded-Tyvek when handling hay
Strip topsoil/Remove gravel roadway	D	
Excavate/Sample/Screen Stage	C/D+	Downgrade as per Section 7.0
Backfill	C/D+	Downgrade as per Section 7.0 or after first lift
Re-vegetate	D	Long-sleeved shirts required
Restore gravel road	D	
CRZ Workers	D	
SZ Workers	D	

5.2 PROTECTION LEVEL DESCRIPTIONS

This sections lists the minimum requirements for each protection level. Modification to these requirements will be noted above.

5.2.1 Level D

Level D consists of the following:

- Safety glasses with side shields
- Hard hat
- Steel-toed work boots
- Work clothing as prescribed by weather

5.2.2 Modified Level D

Modified Level D consists of the following:

- Safety glasses with side shields
- Hard hat
- Steel-toed work boots
- Nitrile, neoprene, latex or PVC overboots
- Outer nitrile, neoprene, or PVC gloves over latex sample gloves
- Face shield (when projectiles or splashes pose a hazard)
- Tyvek coverall [Polyethylene-coated Tyveks required when workers have a potential to be exposed to contaminated liquids or sludges.]

5.2.3 Level C

Level C consists of the following:

- Full-face, air-purifying respirator with appropriate cartridges
- Hooded Tyvek Coveralls [Polyethylene-coated Tyveks required when workers have a potential to be exposed to contaminated liquids or sludges].
- Hard hat
- Steel-toed work boots
- Nitrile, neoprene, latex or PVC overboots
- Nitrile, neoprene, or PVC gloves over latex sample gloves
- Face shield (when projectiles or splashes pose a hazard)

5.2.4 Level B

Level B protection consists of the items required for Level C protection with the exception that an air-supplied respirator is used in place of the air-purifying respirator. The use of Level B protection is not anticipated on this project.

5.2.5 Level A

Level A protection consists of the items required for Level B protection with the addition of a fully-encapsulating, vapor-proof suit capable of maintaining positive pressure. The use of Level A protection is not anticipated on this project.

5.3 SUPPLIED-AIR RESPIRATORS

If air monitoring shows that Level B protection is needed, OHM personnel will wear Survivair 9881-02 Hippack Airline respirators with 5-minute egress bottles. Personnel requiring Level "B" protection and high mobility will wear Survivair Mark 2 SCBA units.

5.4 BREATHING-AIR QUALITY

Code of Federal Regulations 29 CFR 1910.134 states breathing air will meet the requirement of the specification for Grade D breathing air as described in the ANSI/CGA Specification G-7.1-1989. OHM requires a certificate of analysis from vendors of breathing air in order to show that the air meets this standard. Breathing air will be obtained in cylinders exclusively and will be stationed in the exclusion zone (EZ).

5.5 AIR-PURIFYING RESPIRATORS

A NIOSH approved full face respirator with appropriate air purifying cartridges will be used for level C work.

5.6 RESPIRATOR CARTRIDGES

The crew members working in Level C will wear respirators equipped with air-purifying cartridges approved for the following contaminants.

- Organic vapors <1,000 ppm
- Chlorine gas <10 ppm
- Hydrogen chloride <50 ppm
- Sulfur dioxide <50 ppm
- Dusts, fumes and mists with a TWA <0.05 mg/m^3
- Asbestos-containing dusts and mists
- Radionuclides

5.7 CARTRIDGE CHANGES

All cartridges will be changed a minimum of once weekly, or more frequently if personnel begin to experience increased inhalation resistance or breakthrough of a chemical warning property. Cartridges will be labeled with the date service began.

5.8 INSPECTION AND CLEANING

Respirators are checked periodically by a qualified individual and inspected before each use by the wearer. All respirators and associated equipment will be decontaminated and hygienically cleaned after each use.

5.9 FIT TESTING

Annual respirator fit tests are required of all personnel wearing negative-pressure respirators. The test will use isoamyl acetate or irritant smoke. The fit test must be for the style and size of the respirator to be used.

5.10 FACIAL HAIR

No personnel who have facial hair which interferes with the respirator's sealing surface will be permitted to wear a respirator and will not be permitted to work in areas requiring respirator use.

5.11 CORRECTIVE LENSES

Normal eyeglasses cannot be worn under full-face respirators because the temple bars interfere with the respirator's sealing surfaces. For workers requiring corrective lenses, special spectacles designed for use with respirators will be provided.

5.12 CONTACT LENSES

Contact lenses will not be worn with any type of respirator.

5.13 MEDICAL CERTIFICATION

Only workers who have been certified by a physician as being physically capable of respirator usage will be issued a respirator. Personnel unable to pass a respiratory fit test or without medical clearance for respirator use will not be permitted to enter or work in areas on site that require respiratory protection. Employees receive a written physicians opinion that they are fit for general hazardous waste operations as per 29 CFR 1910.120(f)(7).

5.14 SITE-SPECIFIC RESPIRATORY PROTECTION PROGRAM

The primary objective of respiratory protection is to prevent employee exposure to atmospheric contamination. When engineering measures to control contamination are not feasible, or while they are being implemented, personal respiratory protective devices will be used.

The criteria for determining respirator need have been evaluated based on the site contaminants and expected levels of protection are outlined in Section 5.1. Air monitoring will be conducted to confirm that respiratory protection levels are adequate (Section 7.0). All respirator users are OSHA trained in proper respirator use and maintenance. The SS and SSO will observe workers during respirator use for signs of stress. The SS, CIH, and SSO will also evaluate this HASP periodically to determine its continued effectiveness with regard to respiratory protection. All persons assigned to use respirators will have medical clearance to do so.

6.0 DECONTAMINATION PROCEDURES

This section describes the procedures necessary to ensure that both personnel and equipment are free from contamination when they leave the work site.

6.1 PERSONNEL DECONTAMINATION

Decontamination procedures will ensure that material which workers may have contacted in the EZ does not result in personal exposure and is not spread to clean areas of the site. This sequence describes the general decontamination procedure. The specific stages will vary depending on the site, the task, the protection level, etc.

1. Go to end of EZ
2. Wash outer boots and gloves in detergent solution
3. Rinse outer boots and gloves in water
4. Cross into CRZ
5. Remove outer gloves and discard
6. Remove poly-coated Tyvek suit and discard
7. Remove outer sample gloves and discard
8. Remove and wash respirator
9. Rinse respirator and hang to dry
10. Remove inner sample gloves and discard

6.1.1 Suspected Contamination

Any employee suspected of sustaining skin contact with chemical materials will first use the emergency shower. Following a thorough drenching, the worker will proceed to the decontamination facility. Here the worker will remove clothing, shower, don clean clothing, and immediately be taken to the first-aid station. Medical attention will be provided at determined by the degree of injury.

6.1.2 Personal Hygiene

Before any eating, smoking, or drinking, personnel will wash hands, arms, neck and face.

6.2 EQUIPMENT DECONTAMINATION

All contaminated equipment will be decontaminated before leaving the site. Decontamination procedures will vary depending upon the contaminant involved, but may include sweeping, wiping, scraping, hosing, or steaming the exterior of the equipment. Personnel performing this task will wear the proper PPE as prescribed by the SSO.

6.3 DISPOSAL

All decontamination liquids and disposable clothing will be treated as contaminated waste unless determined otherwise by accepted testing methods. Wastes will be disposed of according to state and federal regulations.

7.0 AIR MONITORING

Air monitoring will be conducted in order to determine airborne contamination levels. This ensures that respiratory protection is adequate to protect personnel against the chemicals that are encountered. The following air monitoring efforts will be used at this site. Additional air monitoring may be conducted at the discretion of the SSO.

The following chart describes the air monitoring required and appropriate action levels.

Monitoring Device	*Action Level*	*Action*
LEL/O_2	<10% LEL	Continue
	>10% LEL	Evacuate area, ventilate, upgrade to Level B if necessary, continue to monitor
	20.9% O_2	Continue
	19.5% - 20.8% O_2 or 21.0% - 23.0% O_2	SO will determine cause of the oxygen deficiency/enrichment before work may continue
	<19.5% O_2	Exit areas; evaluate oxygen deficiency; upgrade to Level B; ventilate
	>23.0% O_2	Cease operations; exit area; evaluate situation
PID	0-10 ppm	Level D
	10-250 ppm	Level C
	250-500 ppm	Level B
	>500 ppm	Level A
Mini-Ram (total dust)	≥1.0 mg/m3 - ≤10.0 mg/m3	Level C
	>10.0 mg/m3	Level B
Personal sampling	<TLV	Level D
	≥TLV	Level C
Lead PCBs	25 X TLV	Level B

7.1 LOWER EXPLOSIVE LIMIT/OXYGEN (LEL/O2) METER

Prior to entering a confined-space area or hot work involving welding, cutting, or other high heat-producing operations where flammable or combustible vapors may be present, LEL/O_2 measurements will be taken.

7.2 PHOTOIONIZATION DETECTOR (PID)

A PID will be used to monitor total ionizable organic content of the ambient air. A PID will prove useful as a direct reading instrument to aid in determining if respiratory protection needs to be upgraded and to define the EZ.

For known contaminants only, to determine a protection level from PID data, the SSO will multiply the TLV of the known compound by 25. This will be the limit for Level C protection for that compound. If PID readings exceed 25 times the TLV, Level B protection will be required. Also, regardless of the TLV, a PID reading of 1,000 ppm or more will indicate that the GMC-H cartridges may become overloaded and will necessitate Level B protection. (Note: PID readings do not always indicate the actual air concentration of a compound. Consult the manual, HNU, or the CIH for clarification.)

The SSO will take measurements before operations begin in an area to determine the amount of organic compounds naturally occurring in the air. This is referred to as a background level.

Levels of volatile organic compounds will be measured in the air at active work sites once every hour and at the support zone once every hour when levels are detected above background in the exclusion zone. If levels exceed background at any time in the support zone, work in the exclusion zone will cease and corrective actions will be taken, e.g., cover soil with polyethylene sheeting. Work will not resume until levels reach background in the support zone.

7.3 PORTABLE TOTAL DUST MONITOR

A Mini-ram will be used to monitor the general respirable dust levels on this site. The air sampling will be performed at designated locations at the site perimeter upwind and downwind of the active work areas i the EZ. Site conditions will determine the frequency and duration of dust monitoring. Mini-ram readings will trigger dust abatement actions and PPE upgrades.

7.3.1 Type and Operational Aspects

- Real-Time Aerosol Monitor (Mini-ram Model PDM-3)
  - Principal of Operation
    - Detection of light in the near infrared region back-scattered to a sensor (photovoltaic detector) by airborne particulate in a sensing volume

- The higher the dust concentration, the more back-scattering of light to the sensor, resulting n increased readings

- Device calibrated at the factory against an air sampling filter/gravimetric analysis reference method

7.3.2 Calibration Methods/Frequencies

There is no calibration method or procedure for calibrating the Mini-ram monitor. However, it is recommended that the Mini-ram monitor be re-zeroed once a week. During the zero check, the sampled air passes through the purge air filter and dryer to effect a self-cleaning of the optical chamber.

7.3.3 Preventative Maintenance

Maintenance of the Mini-ram consists of replacement of filters and desiccant, battery replacement, and cleaning of the optical detection assembly.

7.4 INTEGRATED AIR MONITORING PROGRAM

7.4.1 Principle of Operation

- An air sampling pump is calibrated to draw a specified air flow rate (liters per minute) for a designated period of time (usually 8 hours).

- Volume of air sampled is calculated as follows:

  Flow rate (liter/minute) x sample time (minute) = sample volume (liters)

- Use a bubble meter to calibrate air sampling pump; pump is equipped with a rotameter that shows the flow rate during the sampling period.

- Collection Media:
  Lead - mixed cellulose ester filter (MCEF)
  PCBs - glass fiber filter, Florisil sorbent tube

- Connect collection media/holder to air sampling plump using Tygon tubing; this comprises the sampling train that must be assembled to calibrate the pump.

7.4.2 Calibration Methods/Frequencies

Flow rate calibration can be accomplished by using primary standard soap and the Gilibrator (or equivalent). The calibrator allows rapid flow rate determination with direct read-out on the built-in display.

Simply connect the sampler to the calibrator, press the ON push button, and then push the plunger to start a bubble up the flow cell. The flow rate is automatically calculated and shown on the display. Subsequent readings are averaged with the previous readings. It is recommended that calibration of the sampler be checked prior to the start of, and after, each sampling period.

7.4.3 Preventative Maintenance

The Gilian constant flow air sampler was designed for both mechanical and electronic reliability. The sampling pump should not require special maintenance or adjustments under normal conditions. However, as with all instruments, the sampling pump does require some basic care. Basic maintenance of the Gilian air sampler consist of filter replacement, installation and removal of battery packs, storage conditions, and electronic control assembly.

7.5 AIR MONITORING LOG

The SSO will ensure that all air-monitoring data is logged into a monitoring notebook. Data will include all information identified in Procedure 12 of the ER Safety Procedures Manual. The Project CIH will periodically review this data

7.6 CALIBRATION REQUIREMENTS

The PID, LEL/O_2 meter and sampling pumps required with fixed-media air sampling will be calibrated daily prior to use. A separate log will be kept detailing date, time, span gas, or other standard, and name of person performing the calibration.

7.7 AIR MONITORING RESULTS

Air monitoring results will be posted for personnel inspection, and will be discussed during morning safety meetings.

8.0 EMERGENCY RESPONSE

8.1 PRE-EMERGENCY PLANNING

Prior to engaging in construction/remediation activities at the site, OHM will plan for possible emergency situations and have available adequate supplies and manpower to respond. In addition site personnel will receive training during the site orientation concerning proper emergency response procedures.

The following situations would warrant implementation of the ERCP:

Fire/Explosion	• The potential for human injury exists. • Toxic fumes or vapors are released. • The fire could spread on site or off site and possibly ignite other flammable materials or cause heat-induced explosions. • The use of water and/or chemical fire suppressants could result in contaminated run-off. • An imminent danger of explosion exists.
Spill or Release of Hazardous Materials	• The spill could result in the release of flammable liquids or vapors, thus causing a fire or gas explosion hazard. • The spill could cause the release of toxic liquids or fumes in sufficient quantities or in a manner that is hazardous to or could endanger human health.
Spill or Release of High Temperature Liquid or Vapor	• The spill can be contained on site, but the potential exists for ground-water contamination. • The spill cannot be contained on site, resulting in off-site soil contamination and/or ground-water or surface water pollution. • The spill quantity is greater than the reportable quantity limit for the material.
Natural Disaster	• A rain storm exceeds the flash flood level. • The facility is in a projected tornado path or a tornado has damaged facility property. • Severe wind gusts are forecasted or have occurred and have caused damage to the facility.
Medical Emergency	• Overexposure to hazardous materials. • Trauma injuries (broken bones, severe lacerations/bleeding, burns). • Eye/skin contact with hazardous materials. • Loss of consciousness. • Heat stress (Heat stroke). • Cold stress (Hypothermia). • Heart attack. • Respiratory failure. • Allergic reaction.

The following measures will be taken to assure the availability of adequate equipment and manpower resources:

- Sufficient equipment and materials will be kept on site and dedicated for emergencies only. The inventory will be replenished after each use.
- On-site emergency responders will be current in regards to training and medical surveillance programs. Copies of all applicable certificates will be kept on file for on-site personnel required to respond.
- It will be the responsibility of the emergency coordinator to brief the on-site response team on anticipated hazards at the site. The emergency coordinator shall also be responsible for anticipating and requesting equipment that will be needed for response activities.
- Emergency response activities will be coordinated with the Local Emergency Planning Committee (LEPC) in compliance with SARA Title III requirements.

Communications will be established prior to commencement of any activities at the remediation site. Communication will be established so that all responders on site have availability to all pertinent information to allow them to conduct their activities in a safe and healthful manner. The primary communication device will be two-way radios. Air horns may be used to alert personnel of emergency conditions. A telephone will be located at the command post to summon assistance in an emergency.

Primary communication with local responders in the event of an emergency will be accomplished using commercial telephone lines.

8.2 EMERGENCY RECOGNITION AND PREVENTION

Because unrecognized hazards may result in emergency incidents, it will be the responsibility of the Site Supervisor and Site Safety Officer (SSO), through daily site inspections and employee feedback (Safety Observation Program, daily safety meetings, and activity hazard analyses) to recognize and identify all hazards that are found at the site. These may include:

Chemical Hazards	• Materials at the site • Materials brought to the site
Physical Hazards	• Fire/explosion • Slip/trip/fall • Electrocution • Confined space • IDLH atmospheres • Excessive noise
Mechanical Hazards	• Heavy equipment • Stored energy system • Pinch points • Electrical equipment • Vehicle traffic

Environmental Hazards	• Electrical Storms • High winds • Heavy Rain/Snow • Temperature Extremes (Heat/Cold Stress) • Poisonous Plants/Animals

Once a hazard has been recognized, the Site Supervisor and/or the SSO will take immediate action to prevent the hazard from becoming an emergency. This may be accomplished by the following:

- Daily safety meeting
- Task-specific training prior to commencement of activity
- Lock-out/tag-out
- Personal Protective Equipment (PPE) selection/use
- Written and approved permits for hot work, confined space
- Trenching/shoring procedure
- Air monitoring
- Following all OHM standard operating procedures
- Practice drills for fire, medical emergency, and hazardous substances spills

TABLE 8.1

EMERGENCY TELEPHONE NUMBERS

Local Agencies All services	On-Base/Off-Base
Fire Department	401-841-3333/401-846-2211
Police	401-841-3241/401-846-1212
Hospital	
Newport Hospital, Newport RI	401-864-6400
Regional Poison Control Center	800-442-6305
State Agencies	
Rhode Island Department of Environment Management	401-277-3434
Dig Safe	800-225-4977
Federal Agencies	
EPA Environmental Response Team	201-321-6660
Agency for Toxic Substances and Disease Registry	404-639-0615 (24 HR)
Navy ROICC / NTR	
U.S. Coast Guard - Atlantic Strike Team	609-724-0008 / 0396
National Response Center	800-424-8802
Project Manager - Bill Snow	508-435-9561
Director, Health and Safety Kevin McMahon	609-588-6375
OHM Corporation (24 hour)	800-537-9540
Additional Phone #'s in Section 2 this HASP	

8.3 PERSONNEL ROLES, LINES OF AUTHORITY, AND COMMUNICATIONS

This section of the ERCP describes the various roles, responsibilities, and communication procedures that will be followed by personnel involved in emergency responses.

The primary emergency coordinator for this site is the Site Supervisor. In the event an emergency occurs and the emergency coordinator is not on site, the Site Safety Officer or the highest ranking employee on site will serve as the emergency coordinator until he arrives. The emergency coordinator will determine the nature of the emergency and take appropriate action as defined by this ERCP.

The emergency coordinator will implement the ERCP immediately as required. The decision to implement the plan will depend upon whether the actual incident threatens human health or the environment. Immediately after being notified of an emergency incident, the emergency coordinator or his designee will evaluate the situation to determine the appropriate action.

8.3.1 Responsibilities and Duties

This section describes the responsibilities and duties assigned to the emergency coordinator.

It is recognized that the structure of the "Incident Command System" will change as additional response organizations are added. OHM will follow procedures as directed by the fire department, LEPC, State and Federal Agencies as required. OHM will defer to the local Fire Department chief to assume the role of Incident Commander upon arriving on site. Additional on-site personnel may be added to the Site Emergency Response Team as required to respond effectively.

8.3.2 On-site Emergency Coordinator Duties

The on-site emergency coordinator is responsible for implementing and directing the emergency procedures. All emergency personnel and their communications will be coordinated through the emergency coordinator. Specific duties are as follows:

- Identify the source and character of the incident, type and quantity of any release. Assess possible hazards to human health or the environment that may result directly from the problem or its control.
- Discontinue operations in the vicinity of the incident if necessary to ensure that fires, explosions, or spills do not recur or spread to other parts of the site. While operations are dormant, monitor for leaks, pressure build-up, gas generation, or ruptures in valves, pipes, or other equipment, where appropriate.
- Notify local Emergency Response Teams if their help is necessary to control the incident. Table 8.1 provides telephone numbers for emergency assistance.
- Direct on-site personnel to control the incident until, if necessary, outside help arrives.
- Ensure that the building or area where the incident occurred and the surrounding area are evacuated and shut off possible ignition sources, if appropriate. The Emergency Response Team is responsible for directing site personnel such that they avoid the area of the incident and leave emergency control procedures unobstructed.
- If fire or explosion is involved, notify Base Fire Department.
- Notify LANTDIV ROICC
- Notify OHM Project Manager

- Have protected personnel, in appropriate PPE, on standby for rescue.

If the incident may threaten human health or the environment outside of the site, the emergency coordinator should immediately determine whether evacuation of area outside of the site may be necessary and, if so, notify the Police Department and the Office of Emergency Management.

When required, notify the National Response Center. The following information should be provided to the National Response Center:

- Name and telephone number
- Name and address of facility
- Time and type of incident
- Name and quantity of materials involved, if known
- Extent of injuries
- Possible hazards to human health or the environment outside of the facility.

The emergency telephone number for the National Response Center is 800-424-8802.

If hazardous waste has been released or produced through control of the incident, ensure that:

- Waste is collected and contained.

- Containers of waste are removed or isolated from the immediate site of the emergency.

- Treatment or storage of the recovered waste, contaminated soil or surface water, or any other material that results from the incident or its control is provided.

- Ensure that no waste that is incompatible with released material is treated or stored in the facility until cleanup procedures are completed.

- Ensure that all emergency equipment used is decontaminated, recharged, and fit for its intended use before operations are resumed.

- Notify the USEPA Regional Administrator that cleanup procedures have been completed and that all emergency equipment is fit for its intended use before resuming operations in the affected area of the facility. The USEPA Regional Administrator's telephone number is included in the Emergency Contacts.

- Record time, date, and details of the incident, and submit a written report to the USEPA Regional Administrator. Report is due to USEPA within 15 days of the incident.

8.4 SAFE DISTANCES AND PLACES OF REFUGE

The emergency coordinator for all activities will be the SS. No single recommendation can be made for evacuation or safe distances because of the wide variety of emergencies which could occur. Safe distances can only be determined at the time of an emergency based on a combination of site and incident-specific criteria. However, the following measures are established to serve as general guidelines.

In the event of minor hazardous materials releases (small spills of low toxicity), workers in the affected area will report initially to the contamination reduction zone. Small spills or leaks (generally less than 55 gallons) will require initial evacuation of at least 50 feet in all directions to allow for cleanup and to prevent exposure. After initial assessment of the extent of the release and potential hazards, the emergency coordinator or his designee will determine the specific boundaries for evacuation. Appropriate steps such as caution tape, rope, traffic cones, barricades, or personal monitors will be used to secure the boundaries.

In the event of a major hazardous material release (large spills of high toxicity/greater than 55 gallons), workers will be evacuated from the building/site. Workers will assemble at the entrance to the site for a head count by their foremen and to await further instruction.

If an incident may threaten the health or safety of the surrounding community, the public will be informed and, if necessary, evacuated from the area. The emergency coordinator, or his designee will inform the proper agencies in the event that this is necessary. Telephone numbers are listed in Table 8.1.

Places of refuge will be established prior to the commencement of activities. These areas must be identified for the following incidents:

- Chemical release
- Fire/explosion
- Power loss
- Medical emergency
- Hazardous weather

In general, evacuation will be made to the crew trailers, unless the emergency coordinator determines otherwise. It is the responsibility of the emergency coordinator to determine when it is necessary to evacuate personnel to off-site locations.

In the event of an emergency evacuation, all the employees will gather at the entrance to the site until a head count establishes that all are present and accounted for. No one is to leave the site without notifying the emergency coordinator.

8.5 EVACUATION ROUTES AND PROCEDURES

All emergencies require prompt and deliberate action. In the event of an emergency, it will be necessary to follow an established set of procedures. Such established procedures will be followed as closely as possible. However, in specific emergency situations, the emergency coordinator may deviate from the procedures to provide

a more effective plan for bringing the situation under control. The emergency coordinator is responsible for determining which situations require site evacuation.

8.5.1 Evacuation Signals and Routes

Two-way radio communication and an air horn will be used to notify employees of the necessity to evacuate an area or building involved in a release/spill of a hazardous material. The evacuation signal is three long blasts of at least fifteen seconds each on the air horn. Each crew supervisor will have a two way radio. A base station will be installed in the OHM office trailer to monitor for emergencies. Total site evacuation will be initiated only by the emergency coordinator, however, in his absence, decision to preserve the health and safety of employees will take precedence. Evacuation routes will be posted in each outside work area. Signs inside buildings will be posted on walls or other structural element of a building. Periodic drills will be conducted to familiarize each employee with the proper routes and procedures.

8.5.2 Evacuation Procedures

In the event evacuation is necessary, the following actions will be taken:

- The emergency signal will be activated.
- No further entry of visitors, contractors, or trucks will be permitted. Vehicle traffic within the site will cease in order to allow safe exit of personnel and movement of emergency equipment.
- Shut off all machinery if safe to do so.
- ALL on-site personnel, visitors, and contractors in the support zone will assemble at the entrance to the site for a head count and await further instruction from the emergency coordinator.
- ALL persons in the exclusion zone and contamination reduction zone will be accounted for by their immediate crew leaders (e.g., foreman). Leaders will determine the safest exits for employees and will also choose an alternate exit if the first choice is inaccessible.
- During exit, the crew leader should try to keep the group together. Immediately upon exit, the crew leader will account for all employees in his crew.
- Upon completion of the head count, the crew leader will provide the information to the emergency coordinator.
- Contract personnel and visitors will also be accounted for.
- The names of emergency response team members involved will be reported to the emergency spill control coordinator.

- A final tally of persons will be made by the emergency coordinator or designee. No attempt to find persons not accounted for will involve endangering lives of OHM or other employees by re-entry into emergency areas.

- In all questions of accountability, immediate crew leaders will be held responsible for those persons reporting to them. Visitors will be the responsibility of those employees they are seeing. Contractors and truck drivers are the responsibility of the Site Supervisor. The security guard will aid in accounting for visitors, contractors, and truckers by reference to sign-in sheets available from the guard shack.

- Personnel will be assigned by the emergency coordinator to be available at the main gate to direct and brief emergency responders.

- Re-entry into the site will be made only after clearance is given by the emergency coordinator. At his direction, a signal or other notification will be given for re-entry into the facility.

- Drills will be held periodically to practice all of these procedures and will be treated with the same seriousness as an actual emergency.

8.6 EMERGENCY SPILL RESPONSE PROCEDURES AND EQUIPMENT

In the event of an emergency involving a hazardous material spill or release, the following general procedures will be used for rapid and safe response and control of the situation. Emergency contacts found in Table 8.1 provide a quick reference guide to follow in the event of a major spill.

8.6.1 Notification Procedures

If an employee discovers a chemical spill or process upset resulting in a vapor or material release, he or she will immediately notify the on-site emergency coordinator.

On-site Emergency Coordinator will obtain information pertaining to the following:

- The material spilled or released.
- Location of the release or spillage of hazardous material.
- An estimate of quantity released and the rate at which it is being released.
- The direction in which the spill, vapor or smoke release is heading.
- Any injuries involved.
- Fire and/or explosion or possibility of these events.
- The area and materials involved and the intensity of the fire or explosion.

This information will help the on-site emergency coordinator to assess the magnitude and potential seriousness of the spill or release.

8.6.2 Procedure for Containing/Collecting Spills

The initial response to any spill or discharge will be to protect human health and safety, and then the environment. Identification, containment, treatment, and disposal assessment will be the secondary response.

If for some reason a chemical spill is not contained within a dike or sump area, an area of isolation will be established around the spill. The size of the area will generally depend on the size of the spill and the materials involved. If the spill is large (greater than 55 gallons) and involves a tank or a pipeline rupture, an initial isolation of at least 100 ft. in all directions will be used. Small spills (less than or equal to 55 gallons) or leaks from a tank or pipe will require evacuation of at least 50 ft. in all directions to allow cleanup and repair and to prevent exposure. When any spill occurs, only those persons involved in overseeing or performing emergency operations will be allowed within the designated hazard area. If possible the area will be roped or otherwise blocked off.

If the spill results in the formation of a toxic vapor cloud (by reaction with surrounding materials or by outbreak of fire) and its release (due to high vapor pressures under ambient conditions), further evacuation will be enforced. In general an area at least 500 feet wide and 1,000 feet long will be evacuated downwind if volatile materials are spilled. (Consult the DOT Emergency Response Guide for isolation distances for listed hazardous materials.)

If an incident may threaten the health or safety of the surrounding community, the public will be informed and possibly evacuated from the area. The on-site emergency coordinator will inform the proper agencies in the event this is necessary. (Refer to Table 8.1)

As called for in regulations developed under the Comprehensive Environmental Response Compensation Liability Act of 1980 (Superfund), OHM's practice is to report a spill of a pound or more of any hazardous material for which a reportable quantity has not been established and which is listed under the Solid Waste Disposal Act, Clean Air Act, Clean Water Act, or TSCA. OHM also follows the same practice for any substances not listed in the Acts noted above but which can be classified as a hazardous waste under RCRA.

Clean up personnel will take the following measures:

- Make sure all unnecessary persons are removed from the hazard area.
- Put on protective clothing and equipment.
- If a flammable material is involved, remove all ignition sources, and use spark and explosion proof equipment for recovery of material.
- Remove all surrounding materials that could be especially reactive with materials in the waste. Determine the major components in the waste at the time of the spill.
- If wastes reach a storm sewer, try to dam the outfall by using sand, earth, sandbags, etc. If this is done, pump this material out into a temporary holding tank or drums as soon as possible.

- Place all small quantities of recovered liquid wastes (55 gallons or less) and contaminated soil into drums for incineration or removal to an approved disposal site.
- Spray the spill area with foam, if available, if volatile emissions may occur.
- Apply appropriate spill control media (e.g. clay, sand, lime, etc.) to absorb discharged liquids.
- For large spills, establish diking around leading edge of spill using booms, sand, clay or other appropriate material. If possible, use diaphragm pump to transfer discharged liquid to drums or holding tank.

8.6.3 Emergency Response Equipment

The following equipment will be staged in the support zone and throughout the site, as needed, to provide for safety and first aid during emergency responses.

- ABC-type fire extinguisher
- First-aid kit, industrial size
- Eyewash/safety shower
- Emergency signal horn

In addition to the equipment listed above, OHM maintains direct reading instrumentation that may be used in emergency situations to assess the degree of environmental hazard. This equipment will only be used by the Site Safety Officer or other specially trained personnel. This equipment will be stored, charged and ready for immediate use in evaluating hazardous chemical concentrations. The equipment will be located at the OHM office trailer.

EQUIPMENT NAME	*APPLICATION*
Portable H-NU Photoionization Meter	Measures selected inorganic and organic chemical concentrations
Oxygen and Combustible Gas Meter	Measures oxygen and combustible gas levels

8.6.4 Personal Protective Equipment

A supply of two (minimum) SCBAs will be located in the support zone for use in emergency response to hazardous materials releases. They will be inspected at least monthly, according to OSHA requirements. In addition, all emergency response personnel will have respirators available for use with cartridge selection determined by the Site Safety Officer based on the results of direct reading instruments. Emergency response personnel will also be provided with protective clothing as warranted by the nature of the hazardous material and as directed by the Site Safety Officer.

8.6.5 Emergency Spill Response Clean-Up Materials and Equipment

A sufficient supply of appropriate emergency response clean-up and personal protective equipment will be inventoried and inspected, visually, on a weekly basis.

The materials listed below will be kept on site for spill control, depending on the types of hazardous materials present on site. The majority of this material will be located in the support zone, in a supply trailer or storage area. Small amounts will be placed on pallets and located in the active work areas.

- Sand or clay to solidify/absorb liquid spills.
- Appropriate solvents e.g. CITRIKLEEN, for decontamination of structures or equipment.

The following equipment will be kept on site and dedicated for spill cleanup:

- Plastic shovels for recovering corrosive and flammable materials.
- Sausage-shaped absorbent booms for diking liquid spills, drains, or sewers.
- Sorbent sheets (diapers) for absorbing liquid spills.

*NOTE: All contaminated soils, absorbent materials, solvents and other materials resulting from the clean-up of spilled or discharged substances shall be properly stored, labelled, and disposed of off-site.

8.7 EMERGENCY CONTINGENCY PLAN

This section of the ERCP details the contingency measures OHM will take to prepare for and respond to fires, explosions, spills and releases of hazardous materials, hazardous weather, and medical emergencies.

8.8 MEDICAL EMERGENCY CONTINGENCY MEASURES

The procedures listed below will be used to respond to medical emergencies. The SSO will contact the local hospital and inform them of the site hazards and potential emergency situations. A minimum of two First-Aid/CPR trained personnel will be maintained on site.

8.8.1 Response

The nearest workers will immediately assist a person who shows signs of medical distress or who is involved in an accident. The work crew supervisor will be summoned.

The work crew supervisor will immediately make radio contact with the on-site emergency coordinator to alert him of a medical emergency situation. The supervisor will advise the following information:

- Location of the victim at the work site
- Nature of the emergency

- Whether the victim is conscious
- Specific conditions contributing to the emergency, if known

The Emergency Coordinator will notify the Site Safety Officer. The following actions will then be taken depending on the severity of the incident:

- Life-Threatening Incident--If an apparent life-threatening condition exists, the crew supervisor will inform the emergency coordinator by radio, and the local Emergency Response Services (EMS) will be immediately called. An on-site person will be appointed who will meet the EMS and have him/her quickly taken to the victim. Any injury within the EZ will be evacuated by OHM personnel to a clean area for treatment by (EMS) personnel. No one will be able to enter the EZ without showing proof of training, medical surveillance and site orientation.

- Non Life-Threatening Incident--If it is determined that no threat to life is present, the Site Safety Officer will direct the injured person through decontamination procedures (see below) appropriate to the nature of the illness or accident. Appropriate first aid or medical attention will then be administered.

*NOTE: The area surrounding an accident site must not be disturbed until the scene has been cleared by the Site Safety Officer.

Any personnel requiring emergency medical attention will be evacuated from exclusion and contamination reduction zones if doing so would not endanger the life of the injured person or otherwise aggravate the injury. Personnel will not enter the area to attempt a rescue if their own lives would be threatened. The decision whether or not to decontaminate a victim prior to evacuation is based on the type and severity of the illness or injury and the nature of the contaminant. For some emergency victims, immediate decontamination may be an essential part of life-saving first aid. For others, decontamination may aggravate the injury or delay life-saving first aid. Decontamination will be performed if it does not interfere with essential treatment.

If decontamination can be performed, observe the following procedures:

- Wash external clothing and cut it away.

If decontamination cannot be performed, observe the following procedures:

- Wrap the victim in blankets or plastic to reduce contamination of other personnel.

- Alert emergency and off-site medical personnel to potential contamination, instruct them about specific decontamination procedures.

- Send site personnel familiar with the incident and chemical safety information, e.g. MSDS, with the affected person.

All injuries, no matter how small, will be reported to the SSO or the Site Supervisor. An accident/injury/illness report will be completely and properly filled out and submitted to the Regional Health and Safety Director/Project CIH, in accordance with OHM's reporting procedures.

A list of emergency telephone numbers is given in Table 8.1.

8.8.2 Notification

The following personnel/agencies will be notified in the event of a medical emergency:

- Local Fire Department or EMS
- On-site Emergency Coordinator
- Workers in the affected areas
- Client Representative

8.8.3 Directions To Hospital

Written directions to the hospital and a map will be posted in all trailers in the staging area. Directions to the hospital are as follows:

8.9 FIRE CONTINGENCY MEASURES

OHM personnel and subcontractors are not trained professional firefighters. Therefore, if there is any doubt that a fire can be quickly contained and extinguished, personnel will notify the emergency coordinator by radio and vacate the structure or area. The emergency coordinator will immediately notify the local Fire Department.

The following procedures will be used to prevent the possibility of fires and resulting injuries:

- Sources of ignition will be kept away from where flammable materials are handled or stored.
- The air will be monitored for explosivity before and during hot work and periodically where flammable materials are present. Hot work permits will be required for all such work.

- "No smoking" signs will be conspicuously posted in areas where flammable materials are present.
- Fire extinguishers will be placed in all areas where a fire hazard may exist.
- Before workers begin operations in an area the foreman will give instruction on egress procedures and assembly points. Egress routes will be posted in work areas and exit points clearly marked.

8.9.1 Response

The following procedures will be used in the event of a fire:

- Anyone who sees a fire will notify their supervisor who will then contact the Emergency Coordinator by radio. The emergency coordinator will activate the emergency air horns and contact the local Fire Department.
- When the emergency siren sounds, workers will disconnect electrical equipment in use (if possible) and proceed to the nearest fire exit.
- Work crews will be comprised of pairs of workers (buddy system) who join each other immediately after hearing the fire alarm and remain together throughout the emergency. Workers will assemble at a predetermined rally point for a head count.
- When a small fire has been extinguished by a worker, the emergency coordinator will be notified.

8.10 HAZARDOUS WEATHER CONTINGENCY MEASURES

Operations will not be started or continued when the following hazardous weather conditions are present:

- Lightning
- Heavy Rains/Snow
- High Winds

8.10.1 Response

- Excavation/soil stock piles will be covered with plastic liner.
- All equipment will be shut down and secured to prevent damage.
- Personnel will be moved to safe refuge, initially crew trailers. The emergency coordinator will determine when it is necessary to evacuate personnel to off-site locations and will coordinate efforts with fire, police and other agencies.

8.10.2 Notification

The emergency coordinator will be responsible for assessing hazardous weather conditions and notifying personnel of specific contingency measures. Notifications will include:

- OHM employees and subcontractors
- Client Representative
- Local Civil Defense Organization

8.11 SPILL/RELEASE CONTINGENCY MEASURES

In the event of release or spill of a hazardous material the following measures will be taken:

8.11.1 Response

Any person observing a spill or release will act to remove and/or protect injured/contaminated persons from any life-threatening situation. First aid and/or decontamination procedures will be implemented as appropriate.

First aid will be administered to injured/contaminated personnel. Unsuspecting persons/vehicles will be warned of the hazard. All personnel will act to prevent any unsuspecting persons from coming in contact with spilled materials by alerting other nearby persons. Attempt to stop the spill at the source, if possible. Without taking unnecessary risks, personnel will attempt to stop the spill at the source. This may involve activities such as uprighting a drum, closing a valve or temporarily sealing a hole with a plug.

Utilizing radio communications, the emergency coordinator will be notified of the spill/release, including information on material spilled, quantity, personnel injuries and immediate life threatening hazards. Air monitoring will be implemented by the emergency coordinator and SSO to determine the potential impact on the surrounding community. Notification procedures will be followed to inform on-site personnel and off-site agencies. The emergency coordinator will make a rapid assessment of the spill/release and direct confinement, containment and control measures. Depending upon the nature of the spill, measures may include:

- construction of a temporary containment berm utilizing on-site clay absorbent earth
- digging a sump, installing a polyethylene liner and
- diverting the spill material into the sump placing drums under the leak to collect the spilling material before it flows over the ground
- transferring the material from its original container to another container

The emergency coordinator will notify the LANTDIV ROICC, Ens. Price-Thurlow of the spill and steps taken to institute clean-up. Emergency response personnel will clean-up all spills following the spill clean-up plan developed by the emergency coordinator. Supplies necessary to clean up a spill will be immediately available on-site. Such items may include, but are not limited to:

- Shovel, rake
- Clay absorbent
- Polyethylene liner
- Personal safety equipment
- Steel drums
- Pumps and miscellaneous hand tools

The major supply of material and equipment will be located in the Support Zone. Smaller supplies will kept at active work locations. The emergency coordinator will inspect the spill site to determine that the spill has been cleaned up to the satisfaction of the ROICC. If necessary, soil, water or air samples may be taken and analyzed to demonstrate the effectiveness of the spill clean-up effort. The emergency coordinator will determine the cause of the spill and determine remedial steps to ensure that recurrence is prevented. The emergency coordinator will review the cause with the ROICC and obtain his concurrence with the remedial action plan.

9.0 TRAINING REQUIREMENTS

As a prerequisite to employment at OHM, all field employees are required to take a 40-hour training class and pass a written examination. This training covers all forms of personal protective equipment, toxicological effects of various chemicals,hazard communication, bloodborne pathogens, handling of unknown tanks and drums confined-space entry procedures, and electrical safety. This course is in full compliance with OSHA requirements in 29 CFR 1910.120. In addition, all employees receive annual 8-hour refresher training and three day on-site training under a trained experienced supervisor. Supervisory personnel receive an additional 8-hour training in handling hazardous waste operations.

All personnel entering the exclusion zone will be trained in the provisions of this site safety plan and be required to sign the Site Safety Plan Acknowledgment in Appendix A.

Site-specific training, which will include potential site contaminants, site physical and environmental hazards, emergency response and evacuation procedures, and emergency telephone numbers will be held at the site location by the SS and SSO before any site work activities begin.

10.0 MEDICAL SURVEILLANCE PROGRAM

All OHM personnel participate in a medical and health monitoring program. This program is initiated when the employee starts work with a complete physical and medical history and is continued on a regular basis. A listing of OHM's worker medical profile is shown below. This program was developed in conjunction with a consultant toxicologist and OHM's occupational health physician. Other medical consultants are retained when additional expertise is required.

The medical surveillance program meets the requirements of the OSHA Standard 29 CFR 1910.120 (f).

TABLE 10.1

WORKER MEDICAL PROFILE

Item	*Initial*	*Annual*
Medical History	X	X
Work History	X	X
Visual Acuity and Tonometry	X	X
Pulmonary Function Tests	X	X
Physical Examination	X	X
Audiometry Tests	X	X
Chest X-Ray	X	X
Complete Blood Counts	X	X
Blood Chem. (SSAC-23 or equivalent)	X	X
Urinalysis	X	X
Dermatology Examination	X	X
Electrocardiogram/Stress Test	X	X (based on age)

Specific Tests (as required):

(PCB blood or fat, urine mercury, urine arsenic, urine phenol, urine halomethanes, blood cyanide, cholinesterase-pseudo-cholesterase, nerve conduction velocity tests, blood lead, urine lead.)

10.1 EXAMINATION SCHEDULE

Employees are examined initially upon start of employment, annually thereafter, and may be examined upon termination of employment. Unscheduled medical examinations are conducted:

- At employee request after known or suspected exposure to toxic or hazardous materials
- At the discretion of the client, the CIH, SSO, or OHM occupational physician after known or suspected exposure to toxic or hazardous materials
- At the discretion of the OHM occupational physician

All nonscheduled medical examinations will include, as a minimum, all items specified above for periodic surveillance examination, with the exception of the chest X-ray, which will be conducted at the discretion of the occupational physician performing the examination.

APPENDIX A

HEALTH AND SAFETY PLAN CERTIFICATION

HEALTH-AND-SAFETY PLAN CERTIFICATION

By signing this document, I am stating that I have read and understand the site health-and-safety plan for OHM Remediation Services Corp. personnel and visitors entering the site.

REPRESENTING	*NAME (PRINT)*	*SIGNATURE*	*DATE*

APPENDIX B

OHM HAZARD COMMUNICATION PROGRAM

APPENDIX B - OHM HAZARD COMMUNICATION PROGRAM

1. OBJECTIVE

A Hazard Communication (Employee Right-To-Know) Program will be instituted at all OHM Remediation Services Corp. (OHM) facilities and job-sites. A copy of the written Hazard Communication Program contained in this procedure will be present at all OHM job-sites, shops, and facilities.

2. PURPOSE

The purpose of Hazard Communication (Employee Right-to-Know) is to ensure that the hazards of all chemicals located at field project sites, shops, and facilities are transmitted (communicated), according to 29 CFR 1910.1200 and 29 CFR 1926.59 to all OHM personnel and OHM subcontractors.

3. PROGRAM REQUIREMENTS

3.1 It is the responsibility of site supervisors, shop supervisors, and facilities managers to ensure that the Hazard Communication Program for the area under their supervision is updated as necessary.

3.2 Container Labeling--OHM personnel will ensure that all drums and containers are labeled according to contents. These drums and containers will include those from manufacturers and those produced by on site operations. All incoming and outgoing labels shall be checked for identity, hazard warning, and name and address of responsible party.

3.3 Material Safety Data Sheets (MSDSs)--There will be an MSDS located on site for each hazardous chemical known to exist or which is being used on site. All MSDSs will be located in the site health and safety plan which can be found in the office trailer. MSDS's for products in use may be stored in a separate binder.

3.4 Employee Information and Training--Training employees on chemical hazards is accomplished through an ongoing corporate and regional training program. Additionally, chemical hazards will be communicated to employees through daily safety meetings held at OHM field projects and by an initial site orientation program.

3.5 OHM employees will be instructed on the following:

- Chemicals and their hazards in the work area
- How to prevent exposure to these hazardous chemicals
- What the company has done to prevent workers' exposure to these chemicals
- Procedures to follow if they are exposed to these chemicals
- How to read and interpret labels and MSDSs for hazardous substances
- Emergency spill procedures
- Proper storage and labeling

3.6 Before any new hazardous chemical is introduced on site, each employee will be given information in the same manner as during the initial safety class. The site supervisor will be responsible for seeing that the MSDS on the new chemical is available. During the mandatory morning safety briefing, information on each new chemical will be presented.

Should any new chemical be brought on site, the appropriate MSDSs will be added and reviewed with the employees.

4.0. GENERAL

The following written Hazard Communication Program has been established for OHM Remediation Services Corp. (OHM). The purpose of this program is to transmit information to the workers about the chemical hazards in the work place using various media. The transmittal of information will be accomplished by means of a comprehensive Hazard Communication Program, which will include container labeling and other forms of warning, material safety data sheets (MSDSs), and employee training in accordance with 29 CFR 1910.1200 and 29 CFR 1926.59.

Upon mobilization at the job site the Hazard Communication Program will be reviewed with all employees. Upon reading the Hazard Communication Program employees will be asked to sign the "Worker Hazard Communication Acknowledgment Form". The Hazard Communication Program will also be reviewed with new employees and visitors as they arrive on site. These persons will also be asked to sign the acknowledgment form. The Hazard Communication Program shall be available for review by anyone on site any time during normal work hours. OHM will accomplish the hazard communication requirements through formal safety training, departmental safety meetings, and job-site safety meetings.

The Health and Safety Department shall update the Hazard Communication Program when personnel responsibilities change, a new non-routine task is introduced, or an extremely hazardous material needs particular attention. This new program will then be distributed throughout the company.

5.0 RESPONSIBILITIES

Overall responsibility for compliance with the Hazard Communication Program rests with officers, managers, and supervisors of OHM. A brief outline of responsibilities for those persons directly involved with the program will follow. These responsibilities are not all inclusive, but are designed to give guidance in initial and long-term program development. Since each area is different, these responsibilities may vary.

This program is intended to cover those employees who are directly involved with the handling of hazardous chemicals or supervision of activities that involve the use of hazardous chemicals.

5.1 Health and Safety Department Responsibilities

- Review operations with site supervisors to determine what tasks require hazard communication training.
- Advise supervisory people as to which materials may need to be considered hazardous initially and eventually to ensure that hazard task determination is being done according to the written policy.
- Follow up through safety meetings and safety audits to ensure that supervisors are carrying out prescribed company policy.
- Notify supervisors immediately of any operating changes affecting the hazardous chemicals being used.
- Periodically audit the Hazard Communication Program's progress using the Hazard Communication Program audit sheet found at the end of this procedure.

5.2 Training Department Responsibilities

- Ensure that up-to-date records are maintained on training of all employees required to handle hazardous chemicals. The supervisor should keep copies of these records and should also send copies of the initial training to the corporate training secretary for the training file.
- Educate personnel upon initial 40-hour OSHA training to the requirements of the Hazard Communication Standard.

5.3 Site Supervisors' Responsibilities

- Identify jobs requiring the use of hazardous chemicals and provide a list of those jobs and chemicals to the health and safety department.
- Provide the training required by the Hazard Communication Standard and document training of employees in the safe handling of hazardous chemicals.
- Ensure inspection of engineering controls and personal protective equipment before each use. The health and safety department shall help determine a suitable inspection plan for each application as needed.
- Make daily surveys of the work area to ensure that safe practices are being followed. Advise employees of and document unsafe work practices on the first occasion and consider further unsafe work practices as disciplinary violations. Use documentation as topics of safety meetings.
- Ensure required labeling practices are being followed. Labels should be affixed to the container when it arrives. If the contents are transferred to another container, then all label information (manufacturer, manufacturer's telephone number, product name, target organ(s) and product number) must also be affixed to the new container, so that all containers of the material, regardless of size, are labeled. Contact the health and safety department for proper labels.
- Enforce all applicable safety and health standards through periodic documented audits.
- Before ordering a material, determine if a MSDS exists on file. Request a MSDS from the manufacturer for all new products.
- Contact the health and safety department upon receiving new MSDSs to ensure that they have a copy. If they do not, then the site supervisor shall forward a copy to them.

5.4 Employee Responsibilities

- Read and understand entire Hazard Communication Program.
- Obey established safety rules and regulations.
- Use all safety procedures and personal protective equipment as required by company procedures.
- Notify supervisor of the following:
  - Any symptoms or unusual effects that may be related to the use of hazardous chemicals.
  - Any missing, incomplete, or unreadable labels on containers.
  - Missing, damaged, or malfunctioning safety equipment.
- Use approved labels on containers; do not remove labels (labels are available from the health and safety department).
- Use only approved containers for hazardous chemicals. (Is chemical and container compatible and appropriate?)
- Know where emergency equipment and first-aid supplies are located.

- Know location of MSDSs. These will be located in the break/decon area and the job-site office trailer.
- Know what you are expected to do in case of an emergency. Before the commencement of any task, emergency considerations shall be made.

5.5 Shipping/Receiving Personnel Responsibilities

- The Project Control Technician (PCT) or other persons assigned by the site supervisor shall ensure MSDSs are received with initial shipment of a hazardous chemical; if not, contact purchasing to request the appropriate MSDS and also call the health and safety department to determine if there is a MSDS available until the requested MSDS arrives.
- Ensure labels with required information are affixed to all containers.
- Store hazardous materials in designated locations.
- Use proper personal protective equipment when handling hazardous chemicals.
- Report damaged containers or spills to the site supervisor and the site safety officer immediately.

6.0 HAZARD DETERMINATION

OHM will rely on MSDSs from chemical suppliers and manufacturers to meet hazard determination requirements. Other relevant data from laboratory analyses, chemical reference materials, and chemical manufacturers' written evaluation procedures will be utilized when warranted. No other method shall be used to determine a chemicals' hazards unless approved by the health and safety department.

7.0 LABELING

The site supervisor will be responsible for seeing that all containers arriving at OHM job sites are properly and clearly labeled. Site supervisors shall also check all labels for chemical identity and appropriate hazard warnings. If the hazardous chemical is regulated by OSHA in a substance specific health standard (29 CFR 1910), the site supervisor shall ensure that the labels or other forms of warning used are in accordance with the requirements of that standard. Any container that is not labeled shall be immediately labeled after initial discovery with the required information.

The site supervisor, general foreman, or foreman shall be responsible for seeing that all portable containers used in their work area are properly labeled with chemical identity and hazard warning. (Refer to MSDS for required labeling information.)

The site supervisor, general foreman, or foreman shall also ensure that labels on hazardous chemical containers are not removed or defaced unless the container is immediately marked with the required information and that all labels are legible in English and prominently displayed on the container or readily available in the work area throughout each shift.

If any container is found and the contents cannot be identified, the site supervisor shall be contacted immediately. When proper identification is made, a label shall be affixed to the container immediately. If it is discovered that no MSDS is available, the manufacturer and the health and safety department shall be contacted to assist in locating the proper MSDS. If there is no means of identifying the material in the container, the container shall be taken out of service, away from all personnel until it can be tested by the health and safety department or laboratory personnel. The site supervisor shall communicate their findings or awareness of such containers to all personnel working in the area and to the regional health and safety manager.

8.0 MATERIAL SAFETY DATA SHEETS (MSDS)

The site supervisor at OHM job sites will be responsible for maintaining a current MSDS relevant to the hazardous chemicals used on their job sites. The health and safety department will be responsible for compiling the initial MSDS file for the job site and aiding all job sites with the completion and maintenance of their respective MSDS files.

All MSDSs shall be readily available for review by all employees during each work shift. Each job site will designate a clearly marked "Employee Right-to-Know" station where employees can immediately obtain a MSDS and the required information in an emergency. MSDSs shall also be made available, upon request, to designated OHM representatives, other employer's employees, and to any OSHA inspector in accordance with the requirements of 29 CFR 1910.1200(e).

Although manufacturers are required to provide employers with MSDSs on an initial chemical shipment, OHM purchasing agents (and site supervisors purchasing their own material) shall request MSDSs and updates to MSDSs on all purchase orders. Site supervisors that are without proper MSDSs shall be responsible for requesting this information from chemical manufacturers. The site supervisor shall maintain a file of follow-up letters for all hazardous chemical shipments they receive without MSDSs.

9.0 EMPLOYEE INFORMATION AND TRAINING

It is the responsibility of the supervisor in charge of each employee to ensure that the employee is properly trained. Training employees on chemical hazards and chemical handling is accomplished at the time of initial employment at OHM, whenever a new chemical (or physical) hazard is introduced into the work area, and through ongoing formal and informal training programs. Additionally, chemical hazards are communicated to employees through weekly and morning, job- site safety meetings, which shall be documented according to topic, major points discussed, and names of those attending (attendance is mandatory). Records of all formal training conducted at OHM are coordinated and maintained by the Training Department secretary.

At a minimum, OHM will inform employees on the following:

- The requirements of 29 CFR 1910.1200--Hazard Communication--Evaluating the potential hazards of chemicals and communicating information concerning hazards and appropriate protective measures to employees. OHM shall accomplish employee training in several different ways including, but not limited, to 40-hour OSHA Hazardous Waste Worker Training (29 CFR 1910.120), shop safety meetings, job-site safety meetings, Health and Safety Department safety meetings, and formal and informal training about specific chemical hazards.

- The location and availability of the written Hazard Communication Program, list of hazardous chemicals, and MSDSs will be periodically posted on the employee bulletin boards providing the location of the above material.

- Any operations in their work area where hazardous chemicals are present.

- How to work safety with chemicals present in the workplace and minimize potential exposure.

Employee training shall include the following:

- Methods and observations that may be used to detect the presence or release of a hazardous chemical in the work area (monitoring instruments, visual appearance or odor, and acute and chronic health effects).
- The physical, chemical, and health hazards of the chemicals in the work area.
- The methods of preventing exposure to hazardous chemicals including the measures OHM has taken to protect the employees.
- Procedures to follow if OHM employees are exposed to hazardous chemicals (location of the nearest phone, emergency eyewash, and shower will be included). These discussions shall include proper operating procedures for all emergency equipment.
- The details of the OHM written Hazard Communication Program, including an explanation of the labeling system and the MSDSs, and how employees can obtain and use the appropriate hazard information.
- Standard operating procedures within each respective shop. OHM company policy determines what is considered standard operating procedures.
- Procedures for workers involved in non-routine tasks.

Each site supervisor shall ensure that the above training is emphasized to OHM employees. The health and safety department will ensure that each job site is properly informing and training all employees through group meetings and individual discussions. Whenever a new hazardous chemical is placed into use, the site supervisor shall inform the employees of the hazards said chemical may pose. The site supervisor shall also be responsible for obtaining and making available a MSDS for the new chemical.

10.0 HAZARDOUS NON-ROUTINE TASKS

Occasionally, employees at OHM are required to perform tasks which are considered to be non-routine. All tasks OHM considers non-routine shall be carefully discussed among the supervisor and those performing the task. This safety briefing shall include all possible hazards an employee may encounter while completing the task, including:

- Hazard recognition
- Chemicals involved and their hazardous properties
- Physical hazards
- Methods of avoiding hazards (monitoring instruments, proper personal protective equipment, etc.)

The following is a list of some of the non-routine tasks which may occur at OHM job sites. These tasks are all covered in detail in various OHM standard operating Procedures.

7.1 Confined Space Entry

7.2 Excavation, Trenching, and Shoring

7.3 Decontamination of Equipment

7.4 Laboratory Spills

7.5 High-Pressure Washer (Laser) Operation

7.6 Line Entry Procedure

7.7 Hot Work

11.0 INFORMING CONTRACTORS

It shall be the responsibility of the OHM site supervisor to provide subcontractors with the following information:

- Hazardous chemicals to which they may be exposed while performing a task including the following:
  - Chemical properties
  - Physical properties
  - Acute/Chronic health effects
- Location of "Employee Right-to Know" station which includes the following:
  - MSDS for work area
  - Hazard Communication Program
  - Other relevant safety material such as Project Health and Safety Plan (HASP)
- Precautionary measures to be taken to protect employees from chemical and physical hazards.
- Location of nearest emergency equipment (fire extinguisher, eyewash, shower, phone, first-aid kit, etc.)
- Procedures to follow in the event of employee exposure.

- Steps OHM has taken to reduce the risk of exposure to physical and chemical hazards including the following:

  - Safety meetings
  - Hazard Communication Program
  - Proper storage and labeling of hazardous chemicals
  - Health and safety department shop audits

- The methods used to label all hazardous chemicals.

- Emergency evacuation signals and evacuation rally locations.

The health and safety department shall offer assistance in providing the above information to subcontractors working at OHM job sites. On initial visit by a subcontractor to OHM job sites, a "Contractor Right-to-Know" release form shall be completed. This form will state that the above information has been communicated to the perspective contractor.

Conversely, the site supervisor shall obtain the above information from subcontractors for hazardous materials they have brought to our projects.

11.1 Contractor Right-to-Know Acknowledgment

By signing this sheet, the signee is stating that an OHM employee or representative has briefed said signee on the essentials of OHM's Hazard Communication Program, including hazardous chemical(s) to which one may be exposed, location of program and MSDS, precautionary measures taken to protect contractors from chemical and physical hazards, location of nearest emergency equipment, procedures to follow in the event of employer's employee chemical exposure, and method used to label all hazardous chemicals.

Name	Date	Company

12. LIST OF HAZARDOUS CHEMICALS

The following is a list of hazardous chemicals used on this OHM job site. Further information on each hazardous chemical listed below can be found in the MSDS which are included in the site specific health and safety plan.

- Typical OHM Job-Site Hazardous Chemical Inventory List

Available On Site	Chemicals
_____	Acetone
_____	Acetylene
_____	Activated Charcoal, Powder
_____	Alum (Aluminum Sulfate)
_____	Anti-fog Bausch & Lomb
_____	Argon/Methan (95%/5%)
_____	Brake Fluid
_____	Calcium Hydroxide (Hydrated Lime)
_____	Calibration Check Gas
_____	Carbon
_____	Caustic Soda (Sodium Hydroxide)
_____	Citrikleen
_____	Coal Fly Ash
_____	Compressed Air
_____	Diatomaceous Earth
_____	Diesel Fuel
_____	Dry Ice (Solid Carbon Dioxide)
_____	Ethylene Glycol
_____	Ferric Chloride
_____	Freon
_____	Gear Grease - Delta
_____	Helium
_____	Hexane
_____	Hydraulic Fluid
_____	Hydrochloric Acid
_____	Hydrogen
_____	Isobutylene
_____	Kiln Dust
_____	Methanol
_____	Nitrogen
_____	Nitrous Oxide
_____	Oxygen
_____	Penetone
_____	Pentane
_____	Polymers (Flocculants)
_____	Premium Unleaded Gasoline
_____	PVC Solvent Cleaner
_____	PVC Cement
_____	Regular Leaded Gasoline
_____	Starting Fluid
_____	Stoddard Solvent
_____	Sulfuric Acid
_____	10W-40 Motor Oil - Shell

_____ Tube Grease - Kendall
_____ TU Type 555 Thread Sealing Compound
_____ 2-Cycle Oil - Wolf's Head

- Site-Specific Hazardous Chemical Inventory

APPENDIX C

MSDS LIST

Material Safety Data Sheet

From Genium's Reference Collection
Genium Publishing Corporation
1145 Catalyn Street
Schenectady, NY 12303-1836 USA
(518) 377-8855

GENIUM PUBLISHING CORP.

No. 636

MESITYLENE

Issued: November 1987

SECTION 1. MATERIAL IDENTIFICATION

Material Name: MESITYLENE

Description (Origin/Uses): Used as a raw material in chemical synthesis and as an ultraviolet stabilizer.

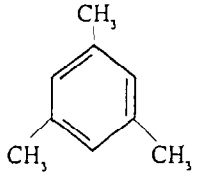
Other Designations: 1,3,5-Trimethylbenzene; 1,3,5-Trimethyl Benzol; TMB; *sym*-Trimethylbenzene; C_9H_{12}; NIOSH *RTECS* No. DC3220000; CAS No. 0108-67-8

Manufacturer/Supplier: Contact your supplier or distributor. Consult the latest edition of the *Chemicalweek Buyers' Guide* (Genium. ref. 73) for a list of suppliers.

HMIS			
H	1		
F	2	R	1
R	0	I	3
PPG*		S	2
*See sect. 8		K	2

SECTION 2. INGREDIENTS AND HAZARDS

	%	EXPOSURE LIMITS
Mesitylene, CAS No. 0108-67-8	ca 100	**ACGIH TLV, 1987-88** TLV-TWA: 25 ppm, 125 mg/m³ **Toxicity Data*** Human, Inhalation, TC_{Lo}: 10 ppm



*See NIOSH, *RTECS*, for additional data.

SECTION 3. PHYSICAL DATA

Boiling Point: 328.3°F (164.6°C)
Vapor Pressure at 20°C, mm Hg: 1.86
Water Solubility: Negligible
Vapor Density (Air = 1): 4.15
Evaporation Rate: Not Found

Specific Gravity (H_2O = 1): 0.8652
Melting Point: -48.6°F (-44.8°C)
% Volatile by Volume: ca 100
Molecular Weight: 120.19 Grams/Mole

Appearance and odor: A clear, colorless liquid; peculiar aromatic odor.

SECTION 4. FIRE AND EXPLOSION DATA

Flash Point and Method	Autoignition Temperature	Flammability Limits in Air	LOWER	UPPER
112°F (44°C) TCC	970°F (521°C)	% by Volume (Calculated)	1.47%	Not Found

Extinguishing Media: Use dry chemical, foam, carbon dioxide, or water fog. Do not use a solid stream of water because the stream will scatter the fire and spread it. Use water spray to cool fire-exposed tanks/containers and to disperse vapors.

Unusual Fire/Explosion Hazards: This OSHA class II combustible liquid is a moderate fire hazard when exposed to heat, sparks, or open flame. It can react vigorously with oxidizing materials. **Warning:** When mesitylene is heated, its vapors may form explosive mixtures with air.

Special Fire-fighting Procedures: Wear a self-contained breathing apparatus (SCBA) with a full facepiece operated in the pressure-demand or positive-pressure mode.

SECTION 5. REACTIVITY DATA

Mesitylene is stable in closed containers at room temperature under normal storage and handling conditions. It does not undergo hazardous polymerization.

Chemical Incompatibilities: Mesitylene is incompatible with strong oxidizing agents.

Conditions to Avoid: Prevent contact with heat, sparks, and open flame.

Hazardous Products of Decomposition: Thermal decomposition or burning may produce carbon dioxide and/or carbon monoxide.

SECTION 6. HEALTH HAZARD INFORMATION

Mesitylene is not listed as a carcinogen by the NTP, IARC, or OSHA.

Summary of Risks: Mesitylene vapor is somewhat unpleasant and may cause irritation of the eyes, nose, and throat. Overexposure to high concentrations of vapor may cause narcosis and central nervous system depression. The liquid is irritating to the eyes and may cause irritation of the skin, especially if contact is repeated or prolonged. **Warning:** Aspiration of liquid into lungs can cause chemical pneumonitis.
Medical Conditions Aggravated by Long-Term Exposure: None reported. **Target Organs:** Central nervous system.
Primary Entry: Inhalation, skin and eye contact. **Acute Effects:** Central nervous system depression, skin and eye irritation.
Chronic Effects: None reported.

FIRST AID: Eye Contact. Immediately flush eyes, including under the eyelids, gently but thoroughly with plenty of running water for at least 15 minutes. **Skin Contact.** Immediately wash the affected area with soap and water. **Inhalation.** Remove victim to fresh air; restore and/or support his breathing as needed.
Ingestion. Call a poison control center. Never give anything by mouth to someone who is unconscious or convulsing. If the victim is responsive, give him one or two glasses of milk or water to drink. Do not induce vomiting because of possible aspiration hazards.

GET MEDICAL HELP (IN PLANT, PARAMEDIC, COMMUNITY) FOR ALL EXPOSURES. Seek prompt medical assistance for further treatment, observation, and support after first aid.

SECTION 7. SPILL, LEAK, AND DISPOSAL PROCEDURES

Spill/Leak: Notify safety personnel of large mesitylene spills or leaks. Remove all sources of heat and ignition. Provide maximum explosion-proof ventilation. Evacuate the spill area and limit access to necessary personnel only. Remove leaking containers to a safe place, if feasible. Those involved in cleanup need protection against contact with liquid and inhalation of vapor (see sect. 8). Absorb small spills with paper toweling or vermiculite. Contain large spills and collect them, if feasible, or absorb them with an inert material such as sand, earth, or vermiculite. Place waste liquid or absorbent into closable containers for reclamation or disposal, using nonsparking tools. Water spray may be used to flush spills away from sensitive exposures. Keep waste out of sewers, watersheds, or waterways.

Waste Disposal: Consider reclamation, recycling, or destruction rather than disposal in a landfill. Contact your supplier or a licensed contractor for detailed recommendations. Follow Federal, state, and local regulations.

SECTION 8. SPECIAL PROTECTION INFORMATION

Goggles: Always wear protective eyeglasses or chemical safety goggles. **Gloves:** Wear impervious gloves.
Respirator: Use a NIOSH-approved respirator per the *NIOSH Pocket Guide to Chemical Hazards* for the maximum-use concentrations and/or the exposure limits cited in section 2. Follow the respirator guidelines in 29 CFR 1910.134. IDLH or unknown concentrations require an SCBA, full facepiece, and pressure-demand/positive-pressure modes. **Warning:** Air-purifying respirators will *not* protect workers in oxygen-deficient atmospheres. **Ventilation:** Install and operate ventilation systems of sufficient power to maintain airborne levels of mesitylene below the cited exposure limit set by the ACGIH in section 2.
Safety Stations: Make eyewash stations, washing facilities, and safety showers available in areas of use and handling.
Contaminated Equipment: Contact lenses pose a special hazard; soft lenses may absorb irritants, and all lenses concentrate them. Remove and launder contaminated clothing before wearing it again; clean material from shoes and equipment.
Comments: Practice good personal hygiene. Keep material off of your clothing and equipment. Avoid transferring material from hands to mouth while eating, drinking, or smoking.

SECTION 9. SPECIAL PRECAUTIONS AND COMMENTS

Storage Segregation: Store mesitylene in closed containers in a cool, dry, well-ventilated area away from oxidizing agents, heat, sparks, and open flame.
Special Handling/Storage: Storage area must meet OSHA requirements for class II combustible liquids. Protect containers from physical damage.
Engineering Controls in the Workplace: All bulk storage facilities must have an explosion-proof design. Ground and bond metal containers and equipment when transferring them to prevent static sparks.
Other Precautions: Do not smoke in areas where this material is handled or stored. Emptied containers retain product residues; handle them accordingly!
Transportation Data (49 CFR 172.101-2)

DOT Shipping Name: 1,3,5-Trimethylbenzene
DOT Hazard Class: Flammable Liquid
IMO Class: 3.3
DOT ID No. UN2325
IMO Label: Flammable Liquid
DOT Label: Flammable Liquid

References: 1, 2, 5, 7, 9, 12, 37, 59, 73, 81, 82, 84-94, 103. CR/PJI

Approvals
Indust. Hygiene/Safety
Medical Review M. Lee Habeeb

Material Safety Data Sheet

From Genium's Reference Collection
Genium Publishing Corporation
1145 Catalyn Street
Schenectady, NY 12303-1836 USA
(518) 377-8855

GENIUM PUBLISHING CORP.

No. 318

XYLENE (Mixed Isomers)
(Revision D)
Issued: November 1980
Revised: August 1988

SECTION 1. MATERIAL IDENTIFICATION

26

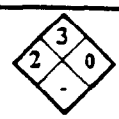
Material Name: XYLENE (Mixed Isomers)

Description (Origin/Uses): Used as a raw material for the production of benzoic acid, phthalic anhydride, isophthalic and terephthalic acids and their dimethyl esters in the manufacture of polyester fibers; in sterilizing catgut; with Canadian balsam as oil-immersion in microscopy; and as a cleaning agent in microscopic techniques.

Other Designations: Dimethylbenzene; Xylol; C_8H_{10}; CAS No. 1330-20-7

Manufacturer: Contact your supplier or distributor. Consult the latest edition of the *Chemicalweek Buyers' Guide* (Genium ref. 73) for a list of suppliers.

Comments: Although there are three different isomers of xylene (*ortho*, *meta*, and *para*), the health and physical hazards of all three isomers are very similar. This MSDS is written for a xylene mixture of all three isomers, which is usually commercial xylene.



NFPA

HMIS	
H	2
F	3
R	0
PPG*	
*See sect. 8	

R	1
I	3
S	2
K	3

SECTION 2. INGREDIENTS AND HAZARDS

Ingredients	%	Exposure Limits
Xylene (Mixed Isomers), CAS No. 1330-20-7*	**	IDLH*** Level: 1000 ppm
o-Xylene, CAS No. 0095-47-6 *m*-Xylene, CAS No. 0108-38-3 *p*-Xylene, CAS No. 0106-42-3		**OSHA PEL** 8-Hr TWA: 100 ppm, 435 mg/m³
		ACGIH TLVs, 1987-88 TLV-TWA: 100 ppm, 435 mg/m³ TLV-STEL: 150 ppm, 655 mg/m³
		Toxicity Data**** Human, Inhalation, TC_{Lo}: 200 ppm Man, Inhalation, LC_{Lo}: 10000 ppm/6 Hrs Rat, Oral, LD_{50}: 4300 mg/kg

*Check with your supplier to determine if there are additions, contaminants, or impurities (such as benzene) that are present in reportable quantities per 29 CFR 1910.

***Immediately dangerous to life and health.

**** See NIOSH, *RTECS* (No. ZE2100000), for additional data with references to reproductive, irritative, and mutagenic effects.

SECTION 3. PHYSICAL DATA

Boiling Point: 275°F to 293°F (135°C to 145°C)*
Melting Point: -13°F (-25°C)
Evaporation Rate: 0.6 Relative to BuAc = 1
Specific Gravity (H_2O = 1): 0.86

Water Solubility (%): Insoluble
Molecular Weight: 106 Grams/Mole
% Volatile by Volume: Ca 100
Vapor Pressure: 7 to 9 Torrs at 68°F (20°C)
Vapor Density (Air = 1): 3.7

Appearance and Odor: A clear liquid; aromatic hydrocarbon odor.

*Materials with wider and narrower boiling ranges are commercially available.

SECTION 4. FIRE AND EXPLOSION DATA

Flash Point and Method	Autoignition Temperature	Flammability Limits in Air	LOWER	UPPER
81°F to 90°F (27°C to 32°C)	867°F (464°C)	% by Volume	1%	7%

Extinguishing Media: Use foam, dry chemical, or carbon dioxide. Use water sprays to reduce the rate of burning and to cool containers.

Unusual Fire or Explosion Hazards: Xylene vapor is heavier than air and may travel a considerable distance to a low-lying source of ignition and flash back.

Special Fire-fighting Procedures: Wear a self-contained breathing apparatus (SCBA) with a full facepiece operated in the pressure-demand or positive-pressure mode.

SECTION 5. REACTIVITY DATA

Xylene is stable in closed containers during routine operations. It does not undergo hazardous polymerization.

Chemical Incompatibilities: This material may react dangerously with strong oxidizers.

Conditions to Avoid: Avoid any exposure to sources of ignition and to strong oxidizers.

Hazardous Products of Decomposition: Carbon monoxide (CO) may be evolved during xylene fires.

SECTION 6. HEALTH HAZARD INFORMATION

Xylene is not listed as a carcinogen by the IARC, NTP, or OSHA.

Summary of Risks: Liquid xylene is a skin irritant and causes erythema, dryness, and defatting; prolonged contact may cause blistering. Inhaling xylene can depress the central nervous system (CNS), and ingesting it can result in gastrointestinal disturbance; and ...ibly hematemesis (vomiting blood). Effects on the eyes, kidneys, liver, lungs, and the CNS are also reported. **Medical Conditions ...ravated by Long-Term Exposure:** Problems with eyes, skin, central nervous system, kidneys, and liver may be worsened by ... to xylene. **Target Organs:** CNS, eyes, gastrointestinal tract, blood, liver, kidneys, skin. **Primary Entry:** Inhalation, ...tact/absorption. **Acute Effects:** Dizziness; excitement; drowsiness; incoordination; staggering gait; irritation of eyes, nose, an... ...oat; corneal vacuolization; anorexia; nausea; vomiting; abdominal pain; and dermatitis. **Chronic Effects:** Reversible eye damage, headache, loss of appetite, nervousness, pale skin, and skin rash.

FIRST AID: Eyes. Immediately flush eyes, including under the eyelids, gently but thoroughly with plenty of running water for at least 15 minutes. **Skin.** Immediately wash the affected area with soap and water. **Inhalation.** Remove the exposed person to fresh air; restore and/or support his or her breathing as needed. Have a trained person administer oxygen. **Ingestion.** Never give anything by mouth to someone who is unconscious or convulsing. Vomiting may occur spontaneously, but do not induce it. If vomiting should occur, keep exposed person's head below his or her hips to prevent aspiration (breathing the liquid xylene into the lungs). Severe hemorrhagic pneumonitis with grave, possibly fatal, pulmonary injury can occur from aspiring very small quantities of xylene.

GET MEDICAL HELP (IN PLANT, PARAMEDIC, COMMUNITY) FOR ALL EXPOSURES. Seek prompt medical assistance for further treatment, observation, and support after first aid. If exposure is severe, hospitilization for at least 72 hours with careful monitoring for delayed onset of pulmonary edema is recommended.

SECTION 7. SPILL, LEAK, AND DISPOSAL PROCEDURES

Spill/Leak: Notify safety personnel, provide ventilation, and eliminate all sources of ignition immediately. Cleanup personnel need protection against contact with and inhalation of xylene vapor (see sect. 8). Contain large spills and collect waste or absorb it with an inert material such as sand, earth, or vermiculite. Use nonsparking tools to place waste liquid or absorbent into closable containers for disposal. Keep waste out of sewers, watersheds, and waterways.

Waste Disposal: Contact your supplier or a licensed contractor for detailed recommendations. Follow Federal, state, and local regulations.

OSHA Designations

Air Contaminant (29 CFR 1910.1000 Subpart Z)

EPA Designations (40 CFR 302.4)

RCRA Hazardous Waste, No. U239

CERCLA Hazardous Substance, Reportable Quantity: 1000 lbs (454 kg), per the Clean Water Act (CWA), section 311 (b) (9)

SECTION 8. SPECIAL PROTECTION INFORMATION

...gles: Always wear protective eyeglasses or chemical safety goggles. Where splashing is possible, wear a full face shield as a ...mentary protective measure. Follow OSHA eye- and face-protection regulations (29 CFR 1910.133). **Respirator:** Use a NIOSH-...ved respirator per the *NIOSH Pocket Guide to Chemical Hazards* for the maximum-use concentrations and/or the exposure limits cited in section 2. Follow OSHA respirator regulations (29 CFR 1910.134). For emergency or nonroutine use (leaks or cleaning reactor vessels and storage tanks), wear an SCBA with a full facepiece operated in the pressure-demand or positive-pressure mode. **Warning:** Air-purifying respirators will *not* protect workers in oxygen-deficient atmospheres. **Other:** Wear impervious gloves, boots, aprons, gauntlets, etc., as required by the specifics of the work operation to prevent prolonged or repeated skin contact with xylene. **Ventilation:** Install and operate general and local maximum, explosion-proof ventilation systems powerful enough to maintain airborne levels of xylene below the OSHA PEL standard cited in section 2. Local exhaust ventilation is preferred because it prevents dispersion of xylene into general work areas by eliminating it at its source. Consult the latest edition of Genium reference 103 for detailed recommendations. **Safety Stations:** Make eyewash stations, safety/quick-drench showers, and washing facilities available in areas of use and handling. **Contaminated Equipment:** Contact lenses pose a special hazard; soft lenses may absorb irritants and all lenses concentrate them. Do *not* wear contact lenses in any work area. Remove contaminated clothing and launder it before wearing it again; clean xylene from shoes and equipment. **Comments:** Practice good personal hygiene; always wash thoroughly after using this material. Keep it off of your clothing and equipment. Avoid transferring it from your hands to your mouth while eating, drinking, or smoking. Do *not* eat, drink, or smoke in any work area. Do not inhale xylene vapor.

SECTION 9. SPECIAL PRECAUTIONS AND COMMENTS

Storage/Segregation: Store xylene in a cool, dry, well-ventilated area away from sources of ignition and strong oxidizers. Protect containers from physical damage.

Special Handling/Storage: Make sure all engineering systems (production, transportation) are of maximum explosion-proof design. Ground and bond all containers, pipelines, etc., used in shipping, transferring, reacting, producing, and sampling operations.

Transportation Data (49 CFR 172.101-2)

DOT Shipping Name: Xylene
DOT ID No. UN1307

DOT Label: Flammable Liquid
DOT Hazard Class: Flammable Liquid

IMO Label: Flammable Liquid
IMO Class: 3.2 or 3.3

References: 1, 2, 12, 73, 84-94, 100, 103.

Prepared by PJ Igoe, BS

Industrial Hygiene Review: DJ Wilson, CIH

Medical Review: MJ Hardies, MD

Material Safety Data Sheet

From Genium's Reference Collection
Genium Publishing Corporation
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Schenectady, NY 12303-1836 USA
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GENIUM PUBLISHING CORP.

No. 624

NAPHTHALENE

Issued: November 1987

SECTION 1. MATERIAL IDENTIFICATION

24

Material Name: NAPHTHALENE

Description (Origin/Uses): Used as a moth repellant and in many industrial processes.

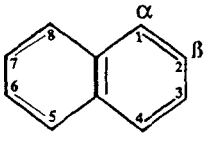
Other Designations: Naphthalin; Naphthene; Tar Camphor; $C_{10}H_8$; NIOSH *RTECS* No. QJ0525000; CAS No. 0091-20-3

Manufacturer: Contact your supplier or distributor. Consult the latest edition of the *Chemicalweek Buyer's Guide* (Genium ref. 73) for a list of suppliers.

HMIS			
H	2		
F	2	R	1
R	0	I	4
PPG*		S	1
*See sect. 8		K	2

SECTION 2. INGREDIENTS AND HAZARDS

Ingredients	%	Exposure Limits
Naphthalene, CAS No. 0091-20-3	ca 100	IDLH* Level: 500 ppm



ACGIH TLVs, 1987-88
TLV-TWA: 10 ppm, 50 mg/m³
OSHA PEL
8-Hr TWA: 10 ppm, 50 mg/m³
Toxicity Data**
Child, Oral, LD_{Lo}: 100 mg/kg
Man, Unknown, LD_{Lo}: 74 mg/kg
Rat, Oral, LD_{50}: 1250 mg/kg

*Immediately dangerous to life and health
**See NIOSH *RTECS* for additional data with references to irritative, mutagenic, reproductive, and tumorigenic effects.

SECTION 3. PHYSICAL DATA

Boiling Point: 424°F (218°C)
Vapor Density (Air = 1): 4.4
Vapor Pressure: 0.087 Torr at 77°F (25°C)
Water Solubility: Insoluble

Specific Gravity (H_20 = 1): 1.162 at 68°F (20°C)
Melting Point: 176°F (80°C)
Molecular Weight: 128 Grams/Mole
% Volatile by Volume: ca 100

Appearance and Odor: White crystalline flakes; strong coal tar odor.

SECTION 4. FIRE AND EXPLOSION DATA

Flash Point and Method	Autoignition Temperature	Flammability Limits in Air	LOWER	UPPER
174°F (79°C) OC; 190°F (88°C) CC	979°F (526°C)	% by Volume	0.9	5.9

Extinguishing Media: Use water spray, dry chemical, or carbon dioxide to fight fires involving naphthalene. **Caution:** Foam or direct water spray applied to molten naphthalene may cause extensive foaming.

Unusual Fire or Explosion Hazards: Naphthalene is a volatile solid that gives off flammable vapor when heated (as in fire situations). This vapor is much denser than air and will collect in enclosed or low-lying areas like sumps. In these areas an explosive air-vapor mixture may form, and extra caution is required to prevent any ignition sources from starting an explosion or fire.

Special Fire-fighting Procedures: Wear a self-contained breathing apparatus (SCBA) with a full facepiece operated in the pressure-demand or positive-pressure mode.

SECTION 5. REACTIVITY DATA

Naphthalene is stable in closed containers at room temperature under normal storage and handling conditions. It does not undergo hazardous polymerization.

Chemical Incompatibilities: Naphthalene is incompatible with strong oxidizing agents, chromic anhydride, and mixtures of aluminum trichloride and benzoyl chloride.

Conditions to Avoid: Ignition sources like open flame, unprotected heaters, excessive heat, lighted tobacco products, and electric sparks must not occur in work areas where naphthalene vapor may become concentrated.

Hazardous Products of Decomposition: Toxic gases like carbon monoxide are produced during fire conditions. Irritating, flammable vapor forms below the melting point because even solid naphthalene has a significant vapor pressure.

SECTION 6. HEALTH HAZARD INFORMATION

Naphthalene is not listed as a carcinogen by the NTP, IARC, or OSHA.

Summary of Risks: Renal shutdown (kidney failure), hemolytic effects (breakdown of red blood cells), hematuria (blood in the urine), oliguria (low volume of urine), jaundice, eye damage, and depression of the central nervous system (CNS) are the primary health concerns associated with exposure to naphthalene. The ACGIH TLVs in section 2 are set to prevent eye damage. These recommended exposure limits may not be low enough to prevent blood changes in genetically hypersensitive individuals.

Medical Conditions Aggravated by Long-Term Exposure: Diseases of the blood, liver, and kidneys. Administer medical exams emphasizing these organs. **Target Organs:** Eyes, skin, kidneys, liver, blood (red blood cell effects), and CNS.

Primary Entry: Inhalation, skin contact. **Acute Effects:** Inhalation of naphthalene vapor causes excitement, confusion, headache, nausea, and loss of appetite. **Chronic Effects:** Increased incidence of cataracts.

FIRST AID

Eye Contact: Immediately flush eyes, including under the eyelids, gently but thoroughly with plenty of running water for at least 15 minutes to remove particles.

Skin Contact: Immediately wash the affected area with soap and water.

Inhalation: Remove victim to fresh air; restore and/or support his breathing as needed.

Ingestion: Call a poison control center. Never give anything by mouth to someone who is unconscious or convulsing. Administer a gastric lavage followed by saline catharsis. Monitor blood and electrolytic balance. Other sources recommend giving the victim several glasses of water to drink.

GET MEDICAL HELP (IN PLANT, PARAMEDIC, COMMUNITY) FOR ALL EXPOSURES. Seek prompt medical assistance for further treatment, observation, and support after first aid.

SECTION 7. SPILL, LEAK, AND DISPOSAL PROCEDURES

Spill/Leak: Notify safety personnel, provide ventilation, and eliminate all ignition sources immediately. Cleanup personnel need protection against contact and inhalation of vapor (see sect. 8). Contain large spills and collect waste. Use nonsparking tools to place naphthalene into closable containers for disposal. Keep waste out of sewers, watersheds, and waterways.

Waste Disposal: Consider reclamation, recycling, or destruction rather than disposal in a landfill. Contact your supplier or a licensed contractor for detailed recommendations. Follow Federal, state, and local regulations.

OSHA Designations

Air Contaminant (29 CFR 1910.1000, Subpart Z)

EPA Designations (40 CFR 302.4)

RCRA Hazardous Waste, No. U165

CERCLA Hazardous Substance, Reportable Quantity: 100 lbs (45.4 kg)

SECTION 8. SPECIAL PROTECTION INFORMATION

Goggles: Always wear protective eyeglasses or chemical safety goggles. Follow the eye- and face-protection guidelines of 29 CFR 1910.133. **Respirator:** Use a NIOSH-approved respirator per the *NIOSH Pocket Guide to Chemical Hazards* (Genium ref. 88) for the maximum-use concentrations and/or the exposure limits cited in section 2. Respirator usage must be in accordance with the OSHA regulations of 29 CFR 1910.134. IDLH or unknown concentrations require an SCBA with a full facepiece operated in the pressure-demand or positive-pressure mode. **Warning:** Air-purifying respirators will *not* protect workers in oxygen-deficient atmospheres.

Other Equipment: Wear impervious gloves, boots, aprons, gauntlets, etc., as required by the specific work environment to prevent skin contact. **Ventilation:** Install and operate general and local maximum explosion-proof ventilation systems of sufficient power to maintain airborne levels of naphthalene below the OSHA PEL standard cited in section 2. **Safety Stations:** Make eyewash stations, washing facilities, and safety showers available in areas of use and handling. **Contaminated Equipment:** Contact lenses pose a special hazard; soft lenses may absorb irritants, and all lenses concentrate them. Do *not* wear contact lenses in any work area. Remove and launder contaminated clothing before wearing it again; clean this material from shoes and equipment.

Comments: Practice good personal hygiene; always wash thoroughly after using this material. Keep this material off of your clothing and equipment. Avoid transferring this material from hands to mouth while eating, drinking, or smoking. Do *not* smoke, eat, or drink in any immediate work area. Avoid inhalation of vapor!

SECTION 9. SPECIAL PRECAUTIONS AND COMMENTS

Storage Segregation: Store naphthalene in a cool, dry, well-ventilated area away from chemical incompatibles (see sect. 5).

Special Handling/Storage: Protect containers from physical damage. All bulk storage facilities must be built with an explosion-proof design. All containers used in shipping/transferring operations must be electrically grounded to prevent static sparks. Use monitoring equipment to measure the extent of vapor present in any storage facility containing naphthalene because of potential fire and explosion hazards.

Comments: All operations with naphthalene must be done carefully to prevent accidental ignition of its flammable/explosive vapor. If the weather is warm, more naphthalene vapor forms and the potential for explosion increases. Do *not* smoke in any use or storage area!

Transportation Data (49 CFR 172.101-2)

DOT Shipping Name: Naphthalene
DOT Hazard Class: ORM-A
IMO Class: 4.1
DOT ID No. UN1334
IMO Label: Flammable Solid
DOT Label: None

References: 1, 2, 12, 73, 84-94, 103. PJI

Approvals

Indust. Hygiene/Safety

Medical Review

Material Safety Data Sheet

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No. 194

ARSENIC TRIOXIDE

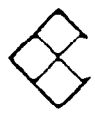
Issued: June 1986

SECTION 1. MATERIAL IDENTIFICATION

MATERIAL NAME: ARSENIC TRIOXIDE

OTHER DESIGNATIONS: Arsenic Oxide, Arsenic Sesquioxide, Arsenous Oxide, Arsenous Acid Anhydride, White Arsenic, As_2O_3, CAS #1327-53-3.

MANUFACTURER/SUPPLIER: Available from several suppliers, including:
Atomergic Chemetals Corp., 100 Fairchild Ave., Plainview, NY 11803;
Telephone: (516) 349-8800
Sharpe Chemicals Co., 1116 S. Varney St., Burbank, CA 91502;
Telephone: (818) 841-7605



HMIS		Not Four
H	3	
F	0	R 1
R	0	I 4
PPE*		S 2
*See Sect. 8		K 0

SECTION 2. INGREDIENTS AND HAZARDS

	%	HAZARD DATA
Arsenic Pentoxide, CAS #1327-53-3	>99	ACGIH TLV• 8-hr TWA: 0.2 mg/m³ OSHA PEL•• 8-hr TWA: 0.01 mg/m³ OSHA Action Level••• 8-hr TWA: 0.005 mg/m³ Man. Oral LD_{50}: 1.43 mg/kg Rat. Oral LD_{50}: 15.1 mg/kg Woman, Oral TDL_{Lo}: 600 mg/kg (Reproductive Effect)

• Current (1985-86) ACGIH TLV for arsenic and soluble compounds, as As.

•• Current OSHA PEL for inorganic arsenic compounds, as As.

••• Concentration that triggers certain provisions of the OSHA Arsenic Standard (29 CFR 1910.1018).

SECTION 3. PHYSICAL DATA

Melting Point ... 275°F (135°C) (Sublimes)•
Specific Gravity ... 3.865•
Vapor Pressure @ 20°C ... Essentially Zero
Solubility in Water, @ 2°C ... 1.2 g/100cc
@ 100°C ... 11.46 g/100cc
Molecular Weight ... 197.84
Appearance and odor: White amorphous lumps or powder.

• Values are for arsenolite. Amorphous arsenic trioxide melts at 599°F (315°C).

SECTION 4. FIRE AND EXPLOSION DATA

Flash Point and Method	Autoignition Temp.	Flammability Limits in Air	LOWER	UPPER
Not Found	Not Found	Not Found	Not Found	Not Found

EXTINGUISHING MEDIA: Arsenic trioxide is noncombustible. Use extinguishing agents (dry chemical, CO_2, water spray, or foam) that are suitable for extinguishing the surrounding fire.
UNUSUAL FIRE/EXPLOSION HAZARDS: Highly toxic fumes and gases may be evolved from this material in a fire situation.

SPECIAL FIRE-FIGHTING PROCEDURES: Fire fighters need self-contained positive-pressure breathing apparatus and full protective gear. Minimize the runoff of fire-control water to prevent pollution.

SECTION 5. REACTIVITY DATA

Arsenic trioxide is stable at room temperature. It does not polymerize.

INCOMPATIBILITIES: Arsenic trioxide may react violently on contact with chlorine trifluoride, fluorine, hydrogen fluoride, oxygen difluoride, sodium chlorate, and other strong oxidizers. Arsine gas (arsenic hydride) can be generated when arsenic compounds come in contact with nascent (freshly formed) hydrogen. This can occur by contact of acid, alkalies, or water with arsenic compounds in the presence of an active metal (zinc, aluminum, magnesium, manganese, sodium, iron, etc.). Arsine is an extremely poisonous (lethal) gas with a garlic odor.
HAZARDOUS DECOMPOSITION PRODUCTS: Arsenic trioxide sublimes when heated. Poisonous arsine gas may also form on decomposition.

SECTION 6. HEALTH HAZARD INFORMATION

CARCINOGENIC ASSESSMENT: Exposure to arsenic compounds is associated with skin, lung, and possibly liver cancer. The NTP, IARC, and OSHA have identified arsenic compounds as human carcinogens. ROUTES OF ENTRY: Arsenic trioxide can enter the body if it is inhaled or swallowed. EFFECTS OF OVEREXPOSURE: Skin contact can cause dermatitis characterized by erythema (abnormal redness of skin caused by capillary congestion) with burning, itching, swelling, and skin eruptions. Chronic skin effects include cracking, thickening, pigmentation, and drying of the skin. Eye contact can cause conjunctivitis and redness, swelling, and pain. Acute inhalation exposure can cause severe nose and respiratory tract irritation and pulmonary edema. Prolonged or repeated exposure can cause necrosis and perforation of the nasal septum. Other effects of chronic arsenic poisoning by inhalation or ingestion may include gastrointestinal disturbances (nausea, vomiting); nervous system effects involving the extremities (numbness, tingling, burning pain, weakness, incoordination); blood disorders (anemia); liver and kidney injury; and skin and lung cancer. Acute ingestion of arsenic trioxide causes burning of the mouth and throat, vomiting, watery or bloody diarrhea, convulsions, paralysis, coma, and death. A dose of 120 mg of arsenic trioxide can be fatal. FIRST AID: EYE CONTACT: Flush eyes, including under eyelids, with a gentle flow of running water for at least 15 minutes. Get medical help.* SKIN CONTACT: Thoroughly wash affected area with mild soap and water. Prevent further exposure. If irritation or other symptoms persist, get medical help.* INHALATION: Remove victim from exposure. Keep him warm and at rest. If breathing has stopped, administer oxygen under low pressure. Get medical help promptly.* INGESTION: Immediately give victim a large quantity (2-4 glasses) of water to drink; induce vomiting. Keep him warm and at rest. Get medical help immediately!* (Note: Never give anything by mouth or induce vomiting if victim is unconscious or convulsing.) * GET MEDICAL ASSISTANCE = In plant, paramedic, community. Get medical help for further treatment, observation, and support after first aid.

SECTION 7. SPILL, LEAK, AND DISPOSAL PROCEDURES

CLEANUP PROCEDURES: Notify safety/environmental personnel of large arsenic trioxide spills. Ventilate spill area. Cleanup personnel should wear protective clothing (gloves, coveralls, goggles, etc.) and use protective respiratory equipment. Carefully vacuum up spilled material (vacuum must have high-efficiency filters to prevent redispersion of dust). Do not sweep or brush it up. Place the waste into a suitable container for reclamation or disposal. Minimize dust generation and prevent skin/eye contact throughout the cleanup process. Wash spill area to remove all residues from environmental surfaces. Use swipe tests to verify cleanliness.

DISPOSAL: This material requires disposal as a hazardous (toxic) waste. Contact supplier or a licensed chemical waste disposal contractor for treatment, packaging, and disposal instructions. Follow Federal, state, and local regulations.

Reportable Spill Quantity: 5000 lbs (2270 kg) (40 CFR 117.3)

EPA Hazardous Waste Number: P012 (40 CFR 261.33)

SECTION 8. SPECIAL PROTECTION INFORMATION

Use local exhaust ventilation when handling this material. Ventilation rates should be sufficient to maintain airborne levels below the PEL. NIOSH-approved respirators should be worn when airborne concentrations exceed the PEL and during nonroutine and emergency operations. Half-mask air-purifying respirators with high-efficiency filters are acceptable for concentrations not greater than 0.1 mg/m³ (0.5 mg/m³ with full facepiece). For concentrations above 0.5 mg/m³, powered air-purifying respirators, positive-pressure-supplied air respirators, or self-contained breathing apparatus are required, depending on the concentration of the material. Respirator usage must be in accordance with appropriate provisions of the OSHA Inorganic Arsenic Standard (29 CFR 1910.1018). Dust-/splash-proof safety goggles should be worn when handling this material. Protective clothing and equipment such as coveralls, gloves, hats, and shoes should be worn when airborne levels exceed the PEL or where the possibility of skin and eye contact exists. Provide clean body-covering work clothing weekly to workers who are exposed to above the PEL (daily if exposed to above 0.1 mg/m³) and arrange for special handling and laundering of contaminated clothing. OTHER CONTROLS: Changing rooms with separate storage facilities for street and work clothing and showers are required for employees who are exposed to above the PEL. Prevent dust from being transported to the lunchroom through the ventilation system or on contaminated clothing. Consult the OSHA Inorganic Arsenic Standard (29 CFR 1910.1018) for detailed requirements. Eyewash stations, washing facilities, and safety showers should be readily accessible. Contact lenses pose a special hazard; soft lenses may absorb irritants and all lenses concentrate them.

SECTION 9. SPECIAL PRECAUTIONS AND COMMENTS

Store arsenic trioxide in a cool, dry location in tightly closed containers away from incompatibles (see sect. 5). Protect containers from physical damage. Keep this material away from food products and feed. Maintain good housekeeping practices to prevent accumulation of arsenic trioxide dust. Use procedures that minimize dust generation such as vacuuming (with appropriate filter) or wet cleanup. Brushing or sweeping should be used only where vacuuming or other relevant methods are ineffective. All handling should be done in a careful manner and with appropriate controls (enclosure, ventilation) to prevent dust generation and dispersion. Practice good personal hygiene. Wash face and hands thoroughly before eating, drinking, and smoking. Showering after the workshift is required for employees exposed to above the PEL. Do not eat, drink, use tobacco, chew gum, or apply cosmetics in the work area. Remove contaminated clothing promptly. Launder it before it is worn again. Do not shake clothing to remove dust; use a vacuum cleaner. Avoid inhalation and skin/eye contact. DO NOT INGEST THIS MATERIAL!

DOT Class: Poison B | DOT ID No. UN1561 | DOT Label: Poison

Data Source(s) Code: 2, 4, 9, 12, 14, 30, 44, 49, 55, 58, 61, 62, 84. CV

Approvals J.O. [signature], 1/87.

Indust. Hygiene/Safety [signature] 11-86

Medical Review [signature]

Material Safety Data Sheet

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GENIUM PUBLISHING CORP.

No. 38
LEAD MONOXIDE
(Revision B)
Issued: November 1979
Revised: February 1986

SECTION 1. MATERIAL IDENTIFICATION

19

MATERIAL NAME: LEAD MONOXIDE

OTHER DESIGNATIONS: Lead (II) Oxide, Plumbous Oxide, Litharge, Massicot, PbO, CAS # 1317-36-8

MANUFACTURER/SUPPLIERS: Available from several suppliers, including:
NL Baroid, Inc., PO Box 1675, Houston, TX 77251; Telephone: (713) 527-1100
Eagle-Picher Industries, Inc., Chemicals Division, 580 Walnut Street, Cincinnati, OH 45202; Telephone: (513) 721-7010

HMIS
H: 2
F: 0
R: 0
PPE: *
* See Sect. 8

Not Found
R 0
I 4
S 0
K 0

SECTION 2. INGREDIENTS AND HAZARDS

	%	HAZARD DATA
LEAD MONOXIDE, PbO ^	>99	ACGIH TLV*: 8-hr TWA: 0.15 mg/m^3 --- OSHA PEL**: 8-hr TWA: 0.05 mg/m^3 --- Rat, Intraperitoneal, LDLo: 430 mg/kg --- Dog, Oral, LDLo: 1400 mg/kg

* Current (1985-86) ACGIH TLV, as Pb

** Current OSHA PEL (as Pb) with an action level of 0.03 mg/m^3 (29 CFR 1910.1025)

SECTION 3. PHYSICAL DATA

Melting Point — 1646.6°F(897°C) (Begins to Sublime before Melting)
Boiling Point — 2681.6°F(1472°C) (Decomposes)
Molecular Weight — 223.2

	Litharge	Massicot
Density	9.53 g/cc	9.6 g/cc
Solubility in Water (@ 25°C)	0.0504 g/L	0.1065 g/L

Appearance and odor: Lead monoxide exists in two crystalline forms: litharge and massicot. The reddish litharge transforms to yellow massicot at 912.2°F(489°C). Lead monoxide is odorless.

SECTION 4. FIRE AND EXPLOSION DATA

Flash Point and Method	Autoignition Temp.	Flammability Limits In Air	LOWER	UPPER
NA	NA	NA		

This material is nonflammable. Use whatever extinguishing agents are appropriate for the surrounding fire.

When hot, lead monoxide can act as an oxidizing agent and may intensify combustion.

Toxic dust and fumes may be generated in a fire situation. Fire fighters should wear self-contained breathing apparatus and full protective gear.

SECTION 5. REACTIVITY DATA

Lead monoxide is stable at room temperature. It does not polymerize. When heated and cooled in air it can undergo transitions between crystalline and oxide forms.

Mixtures of lead oxide and chlorinated rubber may react violently when heated. A lead oxide-glycerol mixture (used as cement/jointing compound) can ignite when exposed to fluorine gas and may explode after exposure to perchloric acid fumes. Violent reactions can occur when lead monoxide is heated with aluminum, sodium, zirconium, titanium, boron, or silicon. Other incompatibles include hydrogen trisulfide, metal acetylides, and peroxyformic acid.

Toxic lead fumes can form at high temperatures.

SECTION 6. HEALTH HAZARD INFORMATION | TLV

Lead compounds are toxic when inhaled or ingested. Lead is a cumulative poison. The chief effects of excessive lead intake are anemia, neurological disorders, and kidney damage. Symptoms of the neurological effects may include irritability, headaches, insomnia, delirium, convulsions, muscular tremors, and palsy of the extremities. Excessive lead exposure may also have adverse effects on human reproduction. Symptoms of acute lead poisoning by ingestion include headache; abdominal pain; nausea; vomiting; diarrhea; and, in severe cases, coma and death.
The IARC concludes that the evidence for carcinogenicity of lead and lead compounds to humans is inadequate. The NTP does not list lead monoxide in its third annual report on carcinogens.

FIRST AID: Any worker who experiences symptoms of lead poisoning should be removed from exposure and receive prompt medical care. EYE CONTACT: Flush eyes (including under the eyelids) with running water for at least 15 minutes. Obtain medical attention. SKIN CONTACT: Flush affected area with plenty of water. If irritation persists, seek medical attention. INHALATION: Remove victim from exposure. Get medical attention for treatment of symptoms. INGESTION: If person is conscious, give him/her plenty of milk or water to drink. Induce vomiting. Keep victim warm and at rest. Get medical assistance immediately.

SECTION 7. SPILL, LEAK, AND DISPOSAL PROCEDURES

Notify safety/environmental personnel of large spills. Ventilate spill area. Cleanup personnel should wear respiratory protection, gloves, and protective clothing. Carefully vacuum up spilled material. Place collected material in a suitable container that can be tightly sealed for reclaim or disposal. Avoid dusting conditions at all stages of handling.

DISPOSAL: Salvage material when possible. PbO requires disposal as a hazardous waste. Contact supplier or a licensed chemical waste disposal contractor for treatment, packaging, and disposal requirements. Follow Federal, state, and local regulations.

EPA Hazardous Waste No.: D008 (EP TOXIC; 40 CFR 261.24)

SECTION 8. SPECIAL PROTECTION INFORMATION

Provide local exhaust ventilation and/or other engineering controls to meet the PEL requirement. NIOSH-approved respirators should be worn where engineering controls and work practices do not reduce exposures to or below the PEL. Half-mask air-purifying respirators with high-efficiency filters are acceptable for concentrations up to 0.5 mg/m^3 (2.5 mg/m^3 with full facepiece). Protective clothing and equipment such as coveralls, gloves, hats, and shoes should be worn when exposures exceed the PEL or where the possibility of skin and eye contact exist. Provide clean body-covering work clothing weekly to workers exposed to above the PEL (daily if exposed above 0.2 mg/m^3) and arrange for special handling and laundering of contaminated clothing. Changing rooms (with separate storage facilities for street and work clothing) and showers are required for employees exposed to above the PEL. Prevent dust from being transported to lunchroom by way of the ventilation system or contaminated clothing. Consult the OSHA lead standard (29 CFR 1910.1025) for detailed requirements.

Contact lenses pose a special hazard; soft lenses may absorb and all lenses concentrate irritants.

SECTION 9. SPECIAL PRECAUTIONS AND COMMENTS

Store in tightly closed containers away from incompatibles. Protect containers from physical damage. Keep away from food or feed. Use good housekeeping procedures (vacuuming and/or wet cleanup) to prevent accumulation of dust. DO NOT use compressed air for cleaning surfaces or clothing (use vacuum). Follow good personal hygiene practice. Wash face and hands thoroughly after handling and before eating, drinking, or smoking. Do not eat, drink, or use tobacco in areas where this material is used.
Exposure monitoring, biological monitoring, and medical surveillance should be provided in accordance with the OSHA Lead Standard (29 CFR 1910.1025).
Prevent dust generation. Use with adequate ventilation. Avoid inhalation and contact. Do not ingest!

DOT Classification: Not listed in Hazardous Materials Table, 49 CFR 172.101.
Data Source(s) Code: 2, 4, 5, 12, 14, 25, 55, 57, 58, 61, 62, 82, 84, CV

Approvals

Indust. Hygiene/Safety 6/86

Medical Review

MATERIAL SAFETY DATA SHEET

GENIUM PUBLISHING CORPORATION
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MSDS # N 162
COPPER (SCRAP - GENERIC)

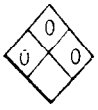
Issued: December 1985
Revised:

rom Genium's MSDS Collection, to be used as a reference.

SECTION 1. MATERIAL IDENTIFICATION

18

MATERIAL NAME: COPPER (SCRAP-GENERIC)
OTHER DESIGNATIONS: Copper (Cu) Metal, Casting, or Powder Scrap
DESCRIPTION: Copper or Copper Alloy.
MANUFACTURER: Available from several suppliers.



SECTION 2. INGREDIENTS AND HAZARDS

	%	HAZARD DATA
BASE METAL: Copper (Cu) CAS #7440 50 8	100% maximum	*PEL (OSHA): 0.1 mg/m^3 **TLV (ACGIH): 0.2 mg/m^3 (as copper fume) --- *PEL (ACGIH): 1.0 mg/m^3 **TLV (ACGIH): 1.0 mg/m^3 (as copper dust or mist --- Rat, oral TDLo: 132 mg/kg --- Human, oral TDLo: 120 mg/kg

* OSHA Permissible Exposure Limit (PEL)
** American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Values (TLV's) current as of revision date.

SECTION 3. PHYSICAL DATA

Boiling Point @ 1 atm .....~2500°C
Vapor Pressure @ 20°C (mm Hg)... N/A
% Volatile by Volume ..... N/A
Melting Point ..... Approx. 1100C
Solubility in Water ..... Insoluble
Evaporation Rate (BuAc=1) ... N/A

APPEARANCE & ODOR: Solid, various shapes, odorless, red/brown-colored metal or powder.

SECTION 4. FIRE AND EXPLOSION DATA

Flash Point and Method	Autoignition Temp.	Flammability Limits in Air	Lower	Upper
None	None	None	NA	NA

EXTINGUISHING MEDIA: Will not burn. Use water to cool.

UNUSUAL FIRE AND EXPLOSION HAZARDS: Fine metal particles produced when ground, sawed, etc., can burn. High concentration of fines (fine particles) in the air may present an explosion hazard. Good housekeeping and adequate ventilation is recommended. Use air-supplied or self-contained breathing apparatus if fires are in enclosed areas.

SECTION 5. REACTIVITY DATA

This material is stable under most conditions. No hazardous polymerization or explosion conditions exist for the bulk metal.

INCOMPATIBILITIES: Strong acids

DECOMPOSITION PRODUCTS: Metallic oxides (copper fumes)

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SECTION 6. HEALTH HAZARD INFORMATION

TLV See Section 2

Copper scrap is poorly absorbed through the skin or alimentary tract, and while in the solid state it is not considered a hazard. Operations such as welding, dust generation, or fume generation could allow exposure copper dusts and fumes. Therefore, it is important to maintain exposure levels below the regulated els as noted in Section 2. Determine actual exposures by industrial hygiene monitoring.

Short-term exposure to copper dusts or fumes may cause irritation of the upper respiratory tract and "metal fume fever," a transient condition with symptoms of fever and chills. Chronic or long-term exposure may result in lung X-ray changes not associated with harmful effects.

FIRST AID:

EYE CONTACT: Protect eyes from particles or fumes. Wash exposed eyes with copious amounts of water for at least 15 minutes.

SKIN CONTACT: Protect skin from molten metal and radiant heat when melting scrap. Skin contamination from powder may be cleaned with soap and water. Machine turnings may present a laceration hazard.

INHALATION: Move to fresh air, restore or support breathing as required.

INGESTION: NA

Copper has not been identified as a carciongen by NTP, IARC or OSHA.

SECTION 7. SPILL, LEAK AND DISPOSAL PROCEDURES

Copper scrap is normally recycled or sold as scrap or landfilled if recycling cannot be justified. Clean up dust/powder spills promptly by vacuum and wet cleaning methods. Treat as an inert solid. Dispose of in accordance with OSHA, EPA, state, or local regulations.

CTION 8. SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION: Use NIOSH/MSHA-approved dust/fume respirator or air-supplied respirator if concentrations of copper in air exceed the regulated standards. Use air-supplied or self-contained breathing apparatus (SCBA) in confined spaces.

VENTILATION: Use only with adequate ventilation where respirable dusts/mists/fumes are possible. Use local exhaust ventilation when cutting, grinding, welding, or remelting.

EYE PROTECTION AND PROTECTIVE CLOTHING: Protect skin from cuts and from hot procedures and processes. Eye and face protection required when grinding, welding, cutting or remelting. Maintain good hygiene and safe work processes. Scrap from machining may be contaminated with cutting oils. When handling oil-contaminated copper, wear rubber gloves to prevent skin contact.

Contact lenses pose a special hazard; soft lenses may absorb and all lenses concentrate irritants.

SECTION 9. SPECIAL PRECAUTIONS AND COMMENTS

Always maintain exposures below the PEL/TLV. Use industrial hygiene air monitoring to ensure that your use of this material does not create a hazard. Always use exhaust ventilation when feasible.

DATA SOURCE(S) CODE (See Glossary) 1-12, 14, 19, 20, 30, 31, 40, 59, OW

APPROVALS JO Duncan, 3/86

INDUST. HYGIENE/SAFETY [signature] 3-86

MEDICAL REVIEW: [signature] Mar 86

Material Safety Data Sheet

From Genium's Reference Collection

Genium Publishing Corporation
1145 Catalyn Street
Schenectady, NY 12303-1836 USA
(518) 377-8855

GENIUM PUBLISHING CORP.

No. 197

ZINC CHLORIDE, SOLID

Issue: June 1986

SECTION 1. MATERIAL IDENTIFICATION

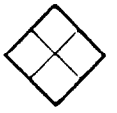
21

MATERIAL NAME: ZINC CHLORIDE, SOLID

DESCRIPTION: Inorganic salt

OTHER DESIGNATIONS: CAS #7646-85-7, $ZnCl_2$, Zinc Butter

MANUFACTURER/SUPPLIER: Available from several suppliers, including: Mallinckrodt, Inc., PO Box M, Paris, KY 40361; Telephone: (606) 987-7000



Not Found

HMIS
H: 1
F: 0
R: 0
PPE*
*See Sect. 8

R -
I 3
S 3
K 0

SECTION 2. INGREDIENTS AND HAZARDS

	%	HAZARD DATA
Zinc Chloride, Solid, CAS #7646-85-7	100	8-hr. TWA: 1 mg/m^3*
* Current OSHA PEL and ACGIH (1985-86) TLV for zinc chloride fumes.		Rat, Oral, LD_{50}: 350 mg/kg Man, Inhalation, TCLo: 4800 mg/m^3/30 min. Mouse, Intraperitoneal, TDLo: 12500 µg/kg (11 Days Pregnant)

SECTION 3. PHYSICAL DATA

Boiling Point ... 1349.6°F (732°C)
Vapor Pressure, mm Hg @ 428°C ... 1.0
Water Solubility @ 25°C, g/100g H_2O ... 423
Vapor Density (Air=1) ... Not Found
Evaporation Rate ... Not Found

Specific Gravity (H_2O = 1) ... 2.91
Melting Point ... 554°F (290°C)
Percent Volatile by Volume ... Not Found
Molecular Weight ... 136.3
pH (Aqueous Solution) ... 4.0

Appearance and odor: White crystalline granules. Odorless.

SECTION 4. FIRE AND EXPLOSION DATA

Flash Point and Method	Autoignition Temp.	Flammability Limits in Air	LOWER	UPPER
Noncombustible	Not Found	Not Found	Not Found	Not Found

EXTINGUISHING MEDIA: Zinc chloride is a noncombustible solid. Use suitable extinguishing media for surrounding fire.

UNUSUAL FIRE/EXPLOSION HAZARDS: This material is not considered to be an explosion hazard.

SPECIAL FIRE-FIGHTING PROCEDURES: Use water spray to cool fire-exposed containers and surrounding combustibles. Fire fighters should use self-contained breathing apparatus and wear fully protective clothing.

SECTION 5. REACTIVITY DATA

Zinc chloride is stable. Hazardous polymerization cannot occur.

This material is incompatible with cyanides and sulfides. An explosion on impact is possible when it has been mixed with potassium.

Thermal decomposition products of zinc chloride may include toxic fumes of chlorine and zinc oxide.

SECTION 6. HEALTH HAZARD INFORMATION

Zinc chloride is not listed as a carcinogen by the IARC, NTP, or OSHA.

SUMMARY OF RISKS: Inhalation of zinc chloride dust may be corrosive to the respiratory tract. Zinc chloride is deliquescent. Contact with skin and mucous membranes can be corrosive. Sensitization may occur in the form of eczematoid dermatitis. Eye contact may cause redness and pain. Ingestion may cause corrosive effects to the esophagus and stomach. Delayed complications can involve esophageal and/or pyloric strictures. TARGET ORGANS: Respiratory tract, skin, eyes, and gastrointestinal tract. PRIMARY ENTRY: Inhalation, ingestion. ACUTE EFFECTS: Inhalation may cause sore throat and coughing. Ingestion may cause abdominal pain and vomiting. Eye or skin contact may cause severe irritation or burns. CHRONIC EFFECTS: Not found.

FIRST AID: EYE CONTACT: Flush eyes thoroughly with running water, including under the eyelids, for at least 15 minutes. Get medical help.* SKIN CONTACT: Remove contaminated clothing. Flush affected area with water; wash with soap and water. Get medical help.* INHALATION: Remove victim to fresh air. Restore and/or support his breathing as required. Get medical help.* INGESTION: Rinse victim's mouth with water. Give him 2 to 3 glasses of water to drink to dilute material. Do not induce vomiting. Vomiting may occur spontaneously. Never give anything by mouth to someone who is unconscious or convulsing. Get medical help.*

* GET MEDICAL ASSISTANCE = In plant, paramedic, community. Get medical help for further treatment, observation, and support after first aid.

SECTION 7. SPILL, LEAK, AND DISPOSAL PROCEDURES

Notify safety personnel of zinc chloride spills. Provide adequate ventilation. Cleanup personnel need protection against inhalation of zinc chloride dust or mist. Sweep up or vacuum waste (avoid generating dust) and place it in an appropriate container for reclamation or disposal. Absorb liquid spills on vermiculite or dry sand. Neutralize the material with slaked lime or sodium bicarbonate. Flush residue with a lot of water.

DISPOSAL: Bury scrap in an approved landfill. Follow Federal, state, and local regulations.

EPA, Clean Water Act, Reportable Spill Quantity: 5,000 lbs.

SECTION 8. SPECIAL PROTECTION INFORMATION

Wear chemical safety goggles for dusty conditions and rubber gloves.

Where dusty conditions occur, use a NIOSH-approved respirator.

Where dusty conditions prevail, provide local exhaust.

Contact lenses pose a special hazard; soft lenses may absorb irritants, and all lenses concentrate them.

Wear body-protective clothing appropriate to the work situation to minimize skin contact with this material. Prevent eye contact by wearing chemical safety goggles and/or a full face shield where splashing of solutions is possible. Soiled clothing must be laundered before it is worn again. Eyewash stations and washing facilities should be available to areas of use and handling.

SECTION 9. SPECIAL PRECAUTIONS AND COMMENTS

Store zinc chloride in tightly closed containers in a cool, dry, well-ventilated area. Protect containers from physical damage.

Practice good housekeeping to prevent accumulation of dust.

Avoid breathing zinc chloride dust. Minimize skin contact by wearing proper gloves and suitable work clothing appropriate to the work situation. Practice good personal hygiene. Wash thoroughly after handling. DO NOT INGEST THIS MATERIAL!

Zinc chloride is designated as a hazardous substance by EPA (40 CFR 116).

DOT Classification: ORM-E DOT No. UN2331 Label: None

Data Source(s) Code: 1, 2, 4-7, 9, 10, 12, 25, 26, 43, 58, 63, 75, 81, 82, 84. CK

Approvals JO. Rizzuto, 1/87.

Indust. Hygiene/Safety JW 1/87

Medical Review

DRAFT
SAMPLING AND ANALYSIS PLAN
FOR
MELVILLE NORTH LANDFILL
NAVAL EDUCATION AND TRAINING CENTER
NEWPORT, RHODE ISLAND

Prepared for:

DEPARTMENT OF THE NAVY
Contract No. N62470-93-D-3032
Delivery Order 0025

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March 20, 1995
OHM Project 16143SAP

OHM Remediation Services Corp.
A Subsidiary of OHM Corporation

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1.0 INTRODUCTION

OHM Remediation Services Corporation, Inc. (OHM) is pleased to submit this Sampling and Analysis Plan (SAP) to the U.S. Navy, Naval Facilities Engineering Command, under RAC N62470-93-C-0293.

This SAP pertains to all sampling matrices which will be encountered for the remediation of the Melville Landfill Site, Newport, Rhode Island; as per Delivery Order No. 025.

This SAP is written by the OHM Field Analytical Services Group.

1.1 SITE DESCRIPTION

The Melville North Landfill Site is an approximate eight acre area, located on the U.S. Naval Base, Newport, Rhode Island. The site was utilized as a landfill from circa 1945-1955. Materials disposed at the landfill include soil, construction debris, spent acids, paints, waste oil, and PCBs.

2.0 SAMPLING AND ANALYSIS ACTIVITIES

The following sampling and analysis tasks will be performed in support of the remedial action at the Melville Landfill Site:

- Mobilization of one (1) OHM sample technician to the site.
- Field screening of excavated soil for volatile organic compounds with a photo-ionization detector (PID). The excavated soil will be staged into separate stockpiles, based upon the PID readings.
- Field screening of excavated soils for total petroleum hydrocarbons (TPH) with the use of commercially-available test kits. The excavated soil will be staged and stockpiled on the basis of the TPH levels.
- Sampling of stockpiled soil for disposal parameters.
- Post-excavation sampling of the excavation walls and floor, upon completion of excavation activities.
- Sampling of all accumulated water, decontamination water, and all contractor generated wastes, for disposal parameters.

2.2 MOBILIZATION

OHM will mobilize one (1) sample technician from the OHM Regional Office in Trenton, New Jersey. Additional support of personnel and/or material will be provided by the OHM Divisional Office in Hopkinton, Massachusetts.

All sampling activities will be performed by the OHM sample technician, who is part of the Field Analytical Services Group. The sample technician is specially trained in the required sampling protocols, which include: preparation of the sampling event, field screening procedures, accurate documentation, various sampling techniques, sample preservation, sample shipment, and health and safety considerations.

2.3 FIELD SCREENING

Field screening activities at the Melville Landfill Site will include:

- The use of a PID for the real-time determination of volatile organic compounds (VOCs) in excavated soil.

2.3.1 Excavated soil staging

All excavated soil will be segregated into sperate stockpiles on the basis of the results of PID and TPH screening. Soils will be placed into the following categories:

- Unimpacted Soil- Soil which shows no visible contamination or petroleum odors, or yields PID readings less than 10 ppm.
- Rhode Island regulated Soil- Soil which shows visible contamination and/or petroleum odors, or yields PID readings at, or greater than, 10 ppm.
- Restricted Non-hazardous Soil- Soil which shows visible contamination and/or petroleum odors, or yields sustained PID readings at levels greater than 100 ppm.
- Hazardous Waste Soil- Soil which shows visible contamination, or petroleum odors, or yields sustained PID readings greater than 1000 ppm.

2.4 EXCAVATED SOILS SAMPLING

The excavated soil piles will be sampled for the appropriate testing parameters.

- Each stockpile of unimpacted soil will be sampled at a frequency of one composite sample per 400 CY.
- Each stockpile of RI regulated soil will be sampled at a frequency of one composite per 150 CY; a second composite sample will be generated for every 500 CY of soil.
- Each stockpile of restricted non-hazardous soil will be sampled at a frequency of one composite per 150 CY; a second composite sample will be generated for every 500 CY of soil.
- Each stockpile of hazardous waste soil will be analyzed at a frequency of one composite sample per 40 CY.

2.4.1 Sample Quantities

Based upon the quantities of excavated materials anticipated, based upon information given in the Bid Specifications, OHM anticipates the following quantities of samples:

Item	Soil quantity (CY)	Sample Quantity
Hazardous waste soil	10	1
Restricted non-hazardous soil	410	3

RI regulated soil	3,700	25
Non-hazardous debris	50	1

2.5 POST-EXCAVATION SOIL SAMPLING

Within two (2) days of the completion of all excavation activities, OHM will soil samples around the excavation perimeter. Soil samples will be obtained at every fifty (50) linear feet of the excavation perimeter.

2.6 CONTAMINATED WATER SAMPLING

OHM will sample all contaminated wastewater which was generated as a result of dewatering and decontamination activities. Wastewater will be stored in 55-gallon drums.

One contaminated water sample will be obtained for every 1,000 gallons (18-20 drums).

3.0 DATA QUALITY OBJECTIVES

USEPA currently defines five levels of data quality for environmental projects, which relate to data precision, accuracy, and completeness.

1. *Screening (Level 1)*: This provides the lowest data quality, but the most rapid results. It is often used for health and safety monitoring at the site, preliminary comparison to ARARs (Applicable or Relevant and Appropriate Requirements), initial site characterization to locate areas for subsequent and more accurate analyses, and for characterization to locate areas for subsequent and more accurate analyses, and for engineering screening of alternatives (bench-scale tests). These types of data include those generated on-site through the use of organic vapor analyzers, temperature and conductivity meters and other similar real time monitoring equipment at the site.

2. *Field Analyses (Level 2)*: This provides rapid results and better quality than in Level 1. Analyses include mobile lab generated data.

3. *Engineering (Level 3)*: This provides an intermediate level of data quality and is used for site characterization and engineering analyses. It may include mobile lab generated data and some analytical lab methods (e.g., laboratory data with quick turnaround used for screening, but full quality control documentation).

4. *Conformation (Level 4)*: This provides the highest level of data quality and is used for purposes of risk assessment, engineering design, and cost analyses. These analyses require full CLP (Contract Laboratory Program) analytical and data validation procedures in accordance with U.S. EPA recognized procedures.

5. *Non-Standard (Level 5)*: This refers to analyses by non-standard protocols, for example, when exacting detection limits, or analysis of an unusual chemical compound is required. These analyses often require method development or adaption. The level of quality control is usually similar to Level 4 data.

3.1 TASK-RELATED QA/QC OBJECTIVES

The sampling and analytical tasks identified in Section 2 of this SAP will be performed in order to achieve the following QA/QC objectives:

- *Field screening* of site activities for the real-time determination of volatile organic contamination of ambient air for health and safety considerations.

  All field screening with the PID and LEL/O2 meter will be performed within EPA QA1 data quality objectives. These instruments will provide real-time information for health and safety purposes, only.

- *Disposal* of all drill cuttings, site water, excavated soil, and spent carbon. Disposal sampling does not require any special QC considerations. Verification of the excavated soil results will be provided by post-excavation sampling and analysis.

- *Post-excavation* soil sampling in order to establish "cleanliness" of remaining site soil. Post-excavation sampling and analysis will be performed within NEESA Level C criteria.

- *QA/QC samples* In addition to the scheduled samples, OHM suggests that duplicate samples, MS/MSD, an equipment rinsate, and one trip blank sample should be obtained for the post-excavation soil sample, in order to increase the data quality level. Indeed, NEESA Level CQA/QC criteria calls for 10% field duplicates.

4.0 PROJECT ORGANIZATION

4.1 OHM FIELD ANALYTICAL SERVICES

OHM provides sampling services through the Eastern Region Field Analytical Services (FAS) Group. The FAS group consists of five sample technicians, three field chemists, three project chemists, and a senior project chemist. These individuals are capable of providing a quality sampling effort, from the initial site characterization, through the sampling event.

Sample Technician

An OHM sample technician or field chemist will perform all site sampling activities. OHM sample technicians are trained in the accurate and complete documentation of the sampling event, and are familiar with all sampling procedures for various matrices.

OHM has two sample technicians and three field chemists who are based out of the Trenton, New Jersey Regional office; they will be utilized, if available. Otherwise, a sample technician or a field chemist will be mobilized from the Hopkinton, Massachusetts Divisional office.

Project Chemist

Bob Lynch will be the project chemist for this project. As project chemist, he will be able to provide support for the sample technician from the Trenton office. This may be in the form of technical assistance, or for the procurement of sampling materials required.

The sample technician consults with the project chemist, as needed, for assistance with sampling protocols. The project chemist serves as the liaison between the project manager, the sample technician, and the laboratory.

Senior Project Chemist

Ron Kenyon is the senior project chemist and the QC manager of the FAS group. He is routinely in communication, often on a daily basis, with the on-site sample technician and project chemist.

4.2 PROJECT MANAGEMENT

Site Supervisor

All on-site activities are coordinated by the OHM site supervisor. The sample technician will coordinate and communicate all sampling efforts with the site supervisor.

Project Manager

The OHM Project Manager is Dan Douthwright. He serves to coordinate all project related decisions. The project chemist acts as a liaison between the laboratory and the project manager. The program manager will be consulted immediately if any sampling and analysis problems occur, and the corrective action taken.

QC Officer

The project chemist or senior project chemist will act as the QC officer. Responsibilities include:

- Review of all sampling documentation, to include chain-of-custody forms.
- Communication with laboratory to assure proper laboratory procedures and QC protocols are adhered to.

5.0 SAMPLING PROCEDURES

The following sections describe the procedures for all of the sample matrices pertinent to the Melville North Landfill Site.

5.1 CONTAMINATED WATER SAMPLING

A 1/4-inch drum thief will be used to obtain the water (liquid) samples. The OHM sample technician will obtain a representative sample of liquid from the drums. The liquid will be transferred to two (2) 40-ml vials for volatile organic analysis. Each vial will be preserved with 4 drops of concentrated HCL; the vials will be completely filled, allowing for no headspace (so that any volatile constituents do not escape).

Remaining liquid sample will be sampled into a 1-L amber glass container for semi-volatiles analysis) and a 1-L polypropylene container (for metals analysis). The metals sample will be preserved with 4 drops of concentrated HCL; the vials will be completely filled, allowing for no headspace (so that any volatile constituents do not escape).

Remaining liquid sample will be sampled into a 1-L amber glass container for semi-volatiles analysis) and a 1-L polypropylene container (for metals analysis). The metals sample will be preserved with 4 drops of concentrated nitric acid.

5.2 EXCAVATED SOIL STOCKPILE SAMPLING

Each stockpile will be sampled by the use of a disposable polypropylene scoop. Grab samples for each stockpile will be obtained at the surface and at a 4-foot depth into each stockpile. A soil auger with an extension will be used at sample 4-feet into the stockpile. A minimum of 3 samples will be obtained 4-feet into each stockpile. At least 3 samples will be obtained from the stockpile surface (0-6").

The grab samples will be composite into an 1-L glass container. All stones, twigs, vegetation, and non-soil debris will be manually removed prior to transfer to the soil to the container. The grab samples will be biased towards areas of visual contamination.

The composite sample will be obtained for each soil stockpile. Each composite sample will consists of, at minimum, six decreet grab samples of the excavated soil, as described above.

The excavation (stockpile) samples will be analyzed for the parameters of concern.

5.3 POST-EXCAVATION SOIL SAMPLING

Upon completion of remedial activities, the OHM sample technician will obtain post-excavation soil samples. Each post-excavation sample will be located at the perimeter of the excavation soil samples. Each post-excavation sample will be located at the perimeter of the excavation, at intervals of fifty (50) liner feet. Approximately fifteen (15) post-excavation samples are anticipated for this project.

Each post-excavation sample will be obtained using stainless steel trowels. Soil samples will be obtained at a depth of 0-3-inches of the surface. All loose debris, rocks, twigs, and other vegetation, will be removed from the soil. The soil is then transferred to the appropriate sample containers.

The sample for volatile analysis is obtained, first. The soil is transferred to an EPA-clean 4-oz. glass container. The container is completely filled, but not compacted, to allow for no headspace. The transfer of

soil to the container is made within a short time frame, with a minimal disturbance of the sample (to remove foreign matter, as described above).

The remaining sample is obtained in a EPA-clean 16-oz. amber glass container.

5.3.1 QA/QC Protocols

Quality assurance/quality control (QA/QC) is an integral component of post-excavation sampling and analysis. A quality sampling events is assured by the use of proper decontamination procedures and the use of QC samples.

The sample trowel will be adequately de-contaminated prior to, and between, each sample point. Decontamination procedures are discussed in Section 6.7 of this SAP.

QC samples will be obtained, in addition to the original post-excavation samples. QC samples to be obtained will include duplicate samples, equipment rinsates, and a field blank sample. These samples are discussed in Section 6.6 of this SAP.

6.0 DOCUMENT QA/QC, SAMPLE MANAGEMENT, AND FIELD QC PROCEDURES

Sample integrity is a key element in any project. Sample integrity strengthens the validity of the analytical data, and can be used for legal documentation if needed. Sample integrity is maintained by OHM through proper sample collection, documentation, and sampling equipment maintenance.

6.1 SAMPLE LABELS

Correct sample labeling and the corresponding notation of the sample ID numbers in the field logbook are necessary to prevent misidentification of samples and their eventual results. All sample labels will be filled out legibly and with indelible ink. They will be affixed to the sample container and covered with clear tape. The following presents an example of a sample label.

LABEL SAMPLE	
PROJECT NO.: 16143	DATE:
SAMPLE:	
TAKEN BY:	TIME:
WITNESS:	

The following information is recorded on the label using indelible ink:

- Project number - 16143
- Date--month, day, and year
- Time--Military hours (e.g., 1000, 1400, 2320) for Eastern Standard Time
- Samples--Description of sample
- Analyze--Analysis which will be performed, if more than one analysis is being done on samples from that project
- Preservative--If used
- Taken By--Initials of person taking sample
- Witness--Initials of person witnessing or assisting in taking sample
- Sample Number--Assigned from laboratory log book. Write number in blank corners of label. Sample numbers will be assigned numerically starting with 001. The OHM project number (16143) will be used as prefix

  Example: 16143-001

- Number of Jars--Used with duplicate samples or when one jar cannot hold all the sample.

Every sample collected will be labeled in the above manner. Information will be printed neatly, except for initials which can be written. After the sample is collected and the label is securely attached, the sample is logged into the sample log book with the sample number written on the sample label.

6.2 SAMPLE CUSTODY AND HANDLING

An important consideration for the collection of environmental data is the ability to demonstrate that analytical samples have been obtained from predetermined locations and that they have reached the laboratory without alteration. Evidence of collection, shipment, laboratory receipt, and laboratory custody until disposal must be documented to accomplish this. Documentation is accomplished through an Analysis Request and Chain-of-Custody Record that records each sample and the individuals responsible for sample collection, shipment, and receipt. A sample is considered in custody if it is:

- In a person's actual possession
- In view after being in physical possession
- Sealed so that no one can tamper with it after having been in physical custody
- In a secured area, restricted to authorized personnel

Overall, chain-of-custody documentation will begin when laboratory personnel record bottle lot numbers during the transfer of bottles to field personnel. Field personnel will then maintain custody of the bottles until sample collection, at which time they will record in their field notes the lot numbers of all bottles used for each sample. A copy of the lot number information will accompany the samples to the laboratory and will be included in the data packages.

Sample custody will be initiated by field personnel upon collection of samples. Labels and log information will be checked to verify that identification is correct. Samples will be packaged to prevent breakage or leakage during transport. Chain-of-custody information will be supplied with the samples and shipped by commercial carriers. The standard OHM Chain-of-Custody is presented in Appendix A.

6.3 FIELD DOCUMENTATION

Several types of documentation will be prepared in the field by the project chemist in order to record the sampling activities and observations.

6.3.1 Field Notebooks

Field notes regarding all sampling and field activities will be kept in a bound notebook with pre-numbered pages. Indelible ink will be used for all entries. It will include among other things:

- Field parameter observations
- Locations of sampling points and corresponding sample numbers
- Documentation of individual samples comprising the composite samples
- Descriptions of deviations from sampling plan
- Signatures of personnel responsible for observations.

6.4 FIELD MANAGEMENT AND SHIPMENT

Upon collection in the field, samples will be properly labeled as discussed and stored in a cool place away from sunlight. Field samples will tighten all container lids, place each sample container in a sealed polyethylene bag, and store the samples in insulated containers, which will be used to transport samples to

the laboratory. The containers, preservative, and holding times for this project are presented in Table 4. Sufficient incombustible, absorbent, cushioning material will be packed in the shipping container to minimize the possibility of sample container breakage. The insulated containers will be secured using nylon strapping tape and custody seals to ensure that samples have not been disturbed during transport. Samples for chemical analysis will be promptly shipped to the laboratory so that they arrive within 24 hours of collection. Samples for geotechnical analysis may be held on site for longer periods. Transportation of samples must be accomplished not only in a manner designed to protect the integrity of the sample, but also to prevent any detrimental effects from the potentially hazardous nature of the samples.

Regulations for packaging, marking, labeling, and shipping of hazardous materials, substances and wastes are promulgated by the U.S. Department of Transportation (DOT) and described in the 49 CFR 171 through 177. In general, these regulations were not intended to cover the shipment of environmental samples collected at hazardous waste sites. Environmental samples usually contain low concentrations of hazardous substances when compared with most of the concentrated materials regulated by the DOT. However, the U.S. EPA has deemed it prudent to package, mark, label, and ship samples observing these DOT procedures, as appropriate.

6.5 FIELD SAMPLING QUALITY CONTROL

Adherence to rigid quality control/quality assurance (QA/QC) protocols is a necessary component of sampling and analysis activities is support of this project.

Sampling QA/QC is assured by the performance of the following tasks:

- Adequate planning of the sampling event, to include the choice of sample locations.
- Accurate documentation of the sampling event, as described in Section 5 of this SAP.
- Decontamination of sampling apparatus prior to each location.
- The use of QA/QC samples: duplicates, matrix spike, matrix spike duplicate, equipment rinsate blanks, field blanks, and trip blanks, as necessary.

NEESA Level E and Level C QA/QC criteria require the following QC samples to be obtained.

6.6 QA/QC SAMPLES

The following QA/QC samples are anticipated for this removal action:

- *Duplicates*. Field duplicates will be generated to access the precision of the sampling and analysis results. The percentage difference between analysis of duplicate samples is a measure of precision; the results of analysis of duplicate samples should not vary outside of accepted criteria.

  - Duplicate samples will be obtained at a frequency of 10% for post-excavation activities. Two (2) soil duplicate samples are is anticipated for this removal action.

- *Equipment rinsates*. A field equipment rinsate will be performed, once a day, for all non-disposable sampling equipment (e.g. sampling trowels). After decontaminating the sampling apparatus, distilled/de-ionized (DI) water will be passed over the apparatus; the water will be collected into an EPA-clean glass container. Analysis of the rinsate water should indicate that lead is not transferred from the sampling apparatus, i.e. cross-contamination between sampling points does not occur. One (1) equipment rinsate is anticipated for this project.

- *Field blank.* A field blank is generated by collecting the DI source water, used for decontamination of the sampling apparatus, into a container. The field blank water is analyzed for the parameters of interest. One (1) field blank will be obtained for this project.

6.7 DECONTAMINATION PROCEDURES

All non-disposable sampling equipment (e.g. stainless steel trowels) will be decontaminated prior to each sample point. The following procedures will be used:

- Detergent (non-phosphate)/water wash
- Tap water rinse
- 10% nitric acid rinse
- Distilled/de-ionized (DI) water rinse
- Acetone rinse
- Air dry

All disposable sampling equipment (e.g. polyproplylene scoops) will be discarded, immediately, after each sampling point.

TABLE 6.1
CONTAINER AND PRESERVATION REQUIREMENTS
FOR REMEDIAL CONSTRUCTION ACTIVITIES
MELVILLE NORTH LANDFILL, NEWPORT, RHODE ISLAND

Parameter	*Matrix*	*Sample Container*	*Container Volume*	*Preservation*	*Maximum Holding Time*
TCLP - Volatiles	Soil	Glass w/Teflon lined cap	4 oz	4° C	14 days
TCLP - Volatiles	Aqueous	3x vial w/Teflon lined septa	40 ml	4° C pH < 2 w/ HCL	14 days
TCLP - Semi-Volatiles	Soil	Glass w/Teflon lined cap	8 oz	4° C	Extract w/in 14 days; Analyze w/in 40 days of extraction
TCLP - Semi-Volatiles	Aqueous	Amber glass w/Teflon lined cap	1-L	4° C	Extract w/in 7 days; Analyze w/in 40 days of extraction
TCL - PCB/Pest.	Soil	Glass w/Teflon lined cap	8 oz	4° C	Extract w/in 14 days; Analyze w/in 40 days of extraction
TCL - PCB/Pest.	Aqueous	Amber glass w/Teflon lined cap	1-L	4° C	Extract w/in 7 days; Analyze w/in 40 days of extraction
TCLP - Metals	Soil	Glass w/Teflon lined cap	8 oz	4° C	6 months
Total Petroleum Hydrocarbons (TPH)	Soil	Glass w/teflon lined cap	8 oz.	4° C	Extract within 28 days; analyze withing 40 days of extraction
Total Petroleum Hydrocarbons (TPH)	Aqueous	Glass w/teflon lined cap	8 oz.	4° C	Analyze within 28 days
TCLP - Metals	Aqueous	Poly glass w/Teflon lined cap	1-L	4° C pH < 2 w/ nitric acid	6 Months
Paint filter	Soil	Glass w/teflon lined cap	8 oz.	4° C	
Lead, total	Soil	Glass w/teflon lined cap	8 oz.	4° C	6 Months
Aromatic volatile organics	Agueous	3 x vial w/teflon lined septa	40 ml	4° C pH< 2w/HCl	14 days
Halogenated volatile organics	Agueous	3 x vial w/teflon lined septa	40 ml	4° C pH< 2w/HCl	14 days

7.0 CALIBRATION PROCEDURES AND FREQUENCY

7.1 FIELD INSTRUMENT CALIBRATION

All field laboratory instrumentation shall be calibrated according to manufacturer's specifications.

7.1.1 HNU Photoionization Detector

HNU photoionization detector, model PI-101. The HNU shall be calibrated twice daily - morning and afternoon. The calibration gas shall be 70 ppm isobutylene.

7.2 LABORATORY INSTRUMENT CALIBRATION

The laboratory procedures relevant methods shall be found in the laboratory Quality Assurance Plan.

8.0 ANALYTICAL PROCEDURES

The analytical procedures which will be utilized for this project are discussed below. All laboratory analysis will consist of standard EPA SW-846, or equivalent methods. The laboratory will perform all associated QC procedures associated with each method.

8.1 DISPOSAL ANALYSIS

8.1.1 Excavated Soils

All RI regulated soil samples, all restricted non-hazardous soil samples, and all hazardous waste soil samples, will be analyzed for:

- Total petroleum hydrocarbons (TPH)
- Paint filter test

All composite samples (1 per 500 CY) of RI regulated soil and restricted non-hazardous soil will be analyzed for the following parameters:

- RCRA Characterization: reactivity, corrosivity, ignitability
- Toxicity characteristic leaching parameter (TCLP):

  - Volatiles
  - Semi-volatiles
  - Metals

- Volatile organic compounds (8240)
- Polychlorinated biphenyls (PCBs) (8080)
- Lead, total (7421)

Unimpacted soils will be analyzed for the following parameters:

- TCLP-volatiles
  semi-volatiles
  metals
- TPH (8015-modified)
- PCBs (8080)

8.1.2 Contaminated Water

Each composite sample of contaminated water will be analyzed for the following parameters:

• TPH	(8015-modified)
• Halogenated volatile organics	(8010)
• Aromatic volatile organics	(8020)
• pH	(9040)

The analytical procedures which will be used for this project are described below. Al laboratory analysis will be standard EPA methods. The laboratory will perform all associated QC procedures associated with each method.

8.2 POST-EXCAVATION SOIL SAMPLES

All post-excavation (15, approx.), and associated QA/QC (4, approx.) Samples will be analyzed for the following parameters:

TPH (full parameters):	volatiles
	semi-volatiles
	pesticides
	herbicides
	metals

8.2.1 Further Characterization

OHM suggests, that TCLP testing, only, of the post-excavation samples may not provide enough information to the "cleanliness" of the remaining soil. TCLP is used to establish whether, or nopt, the soil is hazardous; the analytical results are compared to regulatory thresholds for each TCLP-analyte.

Post-excavation soil analysis is commonly based upon total levels of target analytes, versas TCLP-levels which are based upon leachable levels (which are, generally, less than totals) of analytes. The Rhode Island Department of Environmental Management should have existing standards for background levels of the compounds of concern for the Melville Landfill Site.

These compounds might include Target Compounds List (TCL)-volatile organics, semi-volatile organics, PCBs; Target Analyte List (TAL)-metals, and TPH.

9.0 DATA REDUCTION, VALIDATION AND REPORTING

9.1 DATA REDUCTION AND TABULATION

Data generated from the site activities can be grouped into two broad categories:

- Field data, such as data collected during VOC screening; and
- Chemical data for environmental samples generated by the project laboratory and accompanying QA/QC data package deliverables as required for DQO Level II and Level III;

These data will be compiled and managed using a central project filing system. The field and laboratory data filing system will be a manual storage system established at the Contractor's field office at the Site. Field and laboratory data will be filed chronologically. Field log books, sample logs, sample data sheets, chain-of-custody records, laboratory log books, and laboratory calculation sheets shall be labeled with a task number and date.

Chemical data shall be stored in a spread-sheet based system (e.g., LOTUS 123, EXCEL), with separate files maintained according to sample medium and validation status. The project laboratory shall provide the Project Coordinator and Contractor with computer diskette files containing the analytical data.

9.2 GENERAL PROCEDURES FOR DATA REVIEW/VALIDATION

9.2.1 Level I Data

Level I data (e.g., screening for VOCs) will be validated by reviewing calibration and maintenance records for field instruments and field logbook information associated with individual data sets to ensure that appropriate SOPs were followed. Data validation, therefore, will be qualitative, and will focus on whether field screening data are of acceptable quality based upon supporting documentation. Acceptance or rejection of data will be determined by the judgement of experienced field personnel familiar with the SOPs.

9.2.2 Level II Data

Level II data will undergo qualitative and semi-quantitative review based on the standards or performance of the equipment in use. Acceptance or rejection of Level II data will be based on the judgement of qualified personnel. Level II review would include activities similar to Level I, i.e., review of instrument calibration concentrations.

9.2.3 Level III Data

Generation of the Level III data will include the analysis of QA/QC samples, including blanks, calibration and reference standards, and possibly spiked samples in some instances; however, a complete CLP QA/QC analysis program will not be performed for these samples. Items that will be reviewed to validate the data include:

1) Integrity and completeness of the data package,

2) Holding times from sample receipt at the laboratory to sample extraction and analysis or holding times from sample receipt to analysis, as appropriate.

3) Trip blank and laboratory method blank sample results,

4) Matrix spike, matrix spike duplicate, and replicate analyses,

5) Surrogate recoveries,

6) Field blank sample results, and

7) Field duplicate results.

Data validation will be a qualitative process. Review of precision, accuracy, representativeness, completeness and comparability criteria will be included whenever measurement data are reviewed. The analytical laboratory will provide numerical precision and accuracy data that will be compared to the acceptance criteria. Precision and accuracy values for project data sets that are within the ranges for the type of sample and analytical method used will be considered acceptable. In some cases, data of apparently poor precision and/or accuracy may be somewhat useful. The judgement to accept such data, with appropriate qualifications, will be made by a data validator with appropriate technical expertise.

9.3 DATA REPORTING

The project laboratory will report the data in a certificate of analysis format. Sample analytical results and accompanying QA/QC sample results will be reported to the Project Coordinator on computer diskette files suitable for transfer to the spreadsheet data base.

Analytical data will be identified according to the project laboratory's procedures for establishing sample lots, so that sample analysis data can be matched to corresponding QA/QC samples, control charts, and calibration data.

10.0 QUALITY CONTROL

The degree of quality control necessary for a sampling and analysis event is influenced by the data quality objectives (as discussed in Section 3 of this SAP).

The quality of the sampling event is, in part. assured by the accurate and complete documentation of all sampling and related activities, by the OHM sampling technician. The use of sample gloves, which are frequently changed out, and the proper decontamination of sampling equipment between sample points, contribute to a successful sampling event.
Disposable equipment are used at only one sample location.

For field screening (QA1), the calibration of the PID with isobutylene, performed twice daily, is sufficient to yield quality information pertinent to volatiles contamination in excavated soil. This information will be used to segregate the soil, accordingly; and for health and safety considerations, in order to evaluate levels of respiratory protection.

Disposal sampling does not require any special QA/QC considerations. Generally, laboratory batch QC results are sufficient for assuring quality of the disposal analysis.

However, post-excavation soil analysis, typically, requires a higher data quality level.

10.1 QA/QC SAMPLES

Quality control for post-excavation and groundwater monitoring can be accessed by the use of QA/QC samples.

10.1.1 Duplicate Samples

As indicated in Section 3, the precision of the sampling event is accessed by the use of duplicate samples. The precision of the sampling event is expressed as a RPD between duplicate determinations.

Duplicate samples are obtained by simultaneously filling two containers from the same sample source. The duplicate samples are given unique sample numbers, so to not give the laboratory any indication that the sample material is the same, eliminating bias.

10.1.2 Matrix Spike (MS) Samples

The accuracy of the sampling and analysis is accessed by the use of matrix spike (MS) samples. The % recovery is indicative of the accuracy of the results.

The MS sample will consist of additional sample provided to the laboratory. The laboratory will spike the sample with mixtures of standardized analytes.

10.1.3 Matrix Spike Duplicate (MSD)

MS analysis is performed an a duplicate sample. The results can be expressed as a % recovery to access accuracy, as for the original MS results; in addition, the RPD between the original MS and the MSD is used to access precision.

10.1.4 Equipment Rinsates

The equipment rinsate samples are used to assure that contamination is not transferred between sample points, e.g., cross-contamination does not occur. Cross-contamination between sampling points is minimized by decontamination of non-disposable sampling equipment between sample points. Equipment rinsates, therefore, are not required when disposable sampling equipment is utilized.

10.1.5 Trip Blank

A trip blank is used, generally, only for aqueous volatile samples. For the groundwater monitoring samples, one (1) trip blank will be submitted with each sample batch shipment to the laboratory. The trip blank consist of analyte-free water stored in a 40-ml vial, with no headspace, which is shipped from the laboratory to the site, prior to sampling. The vial is unopened, and is shipped with the samples back to the laboratory. The trip blank is analyzed for volatiles. The laboratory results should indicate that no volatile contamination results from handling and shipping of the samples.

10.2 LABORATORY QA/QC

Laboratory QA/QC analysis includes the preparation of calibration curves, the use of check samples, method blanks, duplicate analysis, and MS/MSD analysis. Commonly, batch QC involves testing of one sample per batch (of 20 samples). One sample (5% QC level) is re-analyzed. Another sample might be spiked then analyzed in duplicate. The results for these analysis apply to all of the samples in the batch.

The standard operating procedures for the laboratory are given in the Laboratory QA/QC Manual.

11.0 PERFORMANCE AND SYSTEM AUDITS

Performance and system audits shall be conducted as necessary by both the field and contract laboratories.

12.0 PREVENTATIVE MAINTENANCE

Preventative maintenance, as needed, will be provided in a timely manner. All field-related problems will be remediated on a site level. Supplies will be order from the site, as possible.

The OHM Regional Office will be contacted, as necessary. Support of equipment and/or additional personnel will be provided by the OHM Regional Shop in Windsor, New Jersey and the Divisional Office in Hopkinton, Massachusetts.

13.0 CORRECTIVE ACTION

Corrective action is required if:

1. Any QC data is outside of the acceptable precision and/or accuracy
2. Blanks or laboratory control samples contain contaminants above acceptable limit
3. Undesirable trends are detected in spike or surrogate recoveries or RPD between duplicates
4. There are unusual changes in method detection limits
5. Deficiencies are detected by the QA department during internal or external audits or from the results of performance evaluation samples
6. Inquiries concerning data quality are received from the Contracting Officer

13.1 CORRECTIVE ACTION PROCEDURES

Corrective actions/procedures for out of control events in the following areas shall be found in the contract laboratory's Quality Assurance Plan. The laboratory QA/QC plan will include standard operating procedures for:

1. Incoming samples
2. Sample holding times
3. Instrument calibrations
4. Practical quantitation limits
5. Method QC
6. Calculation errors
7. On-site audits

14.0 REFERENCES

The following references were used in the preparation of this SAP:

- Sampling and Chemical Analysis Quality Assurance Requirements for the Navy Installation Restoration Program, NEESA 20.2-047B, June 1988, Naval Energy and Environmental Support Activity.

- OHM Field Sampling Manual; March 1989.

- Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, 3rd ed., Sept. 1986 and Update #1, July, 1992

- Bid Specifications for Melville North Landfill, Naval Education Training Center, Middletown, Middletown, Rhode Island, Delivery Order No. 0025.

DRAFT QUALITY CONTROL PLAN
FOR REMOVAL ACTION
MELVILLE NORTH LANDFILL
NAVAL EDUCATION AND TRAINING CENTER
NEWPORT, RHODE ISLAND

Prepared for:

DEPARTMENT OF THE NAVY
Contract No. N62470-93-D-3032
Northern Division
Naval Facilities Engineering Command
10 Industrial Highway
Mail Stop No. 82
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March 9, 1995
Delivery Order 0025
OHM Project 16143

OHM Remediation Services Corp.
A Subsidiary of OHM Corporation

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1.0 STATEMENT OF QC PROGRAM

OHM Remediation Services Corp. (OHM), a subsidiary of OHM Corporation, will provide and maintain an effective Contractor Quality Control (CQC) Program as required by contract clauses. This program will be performed in conjunction with the Program Quality Control Plan (OHM, 1994) as applicable, and in accordance with the requirements of Contract No. N62470-93-D-3032, Atlantic Division, Naval Facilities Engineering Command, dated August 1993. OHM will perform the inspections and tests required to ensure that materials, workmanship, and construction conform to the drawings, specifications, and contract requirements. OHM will perform the test or inspection specified, unless the required inspection and/or test is specifically designated to be performed by the Government.

2.0 *PROGRAM ORGANIZATION AND PERSONNEL RESPONSIBILITIES*

OHM will implement the CQC Program by establishing a QC organization which works directly with the Navy's on-site representative and reports to the OHM Program QC Manager. The QC organization will consist of not less than one QC person who will be on the job site while removal activities are in progress to verify compliance with the contract requirements. The QC organization will be supplemented by additional QC personnel, if necessary. OHM recognizes that the Navy Technical Representative (NTR) reserves the right to replace a member of the QC staff who, in the opinion of the NTR, is not accomplishing their assigned duties.

The CQC Program includes an inspection schedule, which will be available for review prior to the start of construction and throughout the life of the project. The inspection and testing processes will monitor the overall quality of work, and project controls will be instituted to assure correction of deficiencies identified during the inspections and testing. Project scheduling will be instituted to assure proper sequence and performance of work activities.

The NTR will be notified in writing prior to proposed changes to the CQC Program, including changes in the QC organization personnel. The proposed changes will be subject to the NTR's approval prior to implementation.

OHM's QC organization chart for Delivery Order 0025 is included as Figure 1. Professional profiles of OHM's delivery order specific project team and QC team are provided in Appendix A. Professional profiles of OHM's Program Management team are provided in the Program QC Plan. The responsibilities of each person identified in the QC organization are presented below.

2.1 PROGRAM MANAGER, GEORGE E. KRAUTER, P.E.

The program manager has ultimate responsibility for QC of project deliverables. Specific responsibilities includes:

- Reviewing all deliverables prior to submittal to Atlantic Division, Naval Facilities Engineering Command
- Communicating with the OHM project manager to ensure project schedule and scope compliance
- Communicating with contracting officer (CO), contracting officer's technical representative (COTR), and/or NTR on a regular basis to review project progress and contract compliance
- Reviewing program QC procedures
- Providing cost accounting updates to verify project is within budget.

2.2 PROJECT MANAGER, WILLIAM L. SNOW, P.E.

The project manager is responsible for:

- Project management and control
- Project team leadership
- Client relations
- Providing deliverables which are both responsive and on schedule
- Reviewing all project activities including, but not limited to, sampling, remediation, decontamination, documentation, chain-of-custody procedures, site rules and compliance, and compliance with the OHM site-specific health and safety plan and the work plan
- Monitoring project progress to ensure schedule and budget maintenance
- Communicating with the Program Manager
- Ensuring CQC program is being performed.

2.3 SITE MANAGER, BRAD COATS

The site manager is responsible for day-to-day on-site activities. He communicates with the project manager to update him on project progress and QC activities.

2.4 PROGRAM QC MANAGER, MICHAEL I. GILMAN

The program QC manager is responsible for delivery order quality and, for this delivery order, will provide support to the project manager on an as-needed basis. If an independent site audit were to take place during site activities, the program QC manager's representative would perform the audit. The program QC manager will oversee work performed by the site QC representative. The QC manager will also monitor the correction of any nonconforming work. He will be responsible for reviewing the laboratory QC program to ensure its conformance with the contract program requirements.

2.5 QUALITY CONTROL REPRESENTATIVE, TBD

The responsibilities of the site QC representative will include:

- Perform, or cause to be performed, daily inspections and tests of the scope and characters necessary to achieve the quality of construction outlined in the plans and specifications for work under the contract.

- Maintain the latest applicable drawings and specifications with amendments and/or approved modifications at the job site and assure that they are used for shop drawings, fabrication, construction, inspections, and testing.

- Maintain marked-up drawings at the site depicting as-built conditions. The drawings will be available for review by the NTR at all times.

- Maintain the delivery order submittal register (see Section 6.4 of this plan) for the duration of the contract. A review of the register will be performed at least every 14 days in conjunction with the scheduled dates on the register and in relation to the actual work status. Appropriate actions will be undertaken should schedule set-backs or other changes so necessitate.

- Review shop drawings and/or other submittals for compliance with the contract requirements prior to their transmission to the Navy.

- Stamp each sheet of each submittal with the QC certifying statement or approving statement. Data submitted in bound volumes or on a sheet printed on two sides may be stamped on the front of the first sheet only.

- Authorization to temporarily shut down a portion of work if work practices or procedures are determined to be incorrect or out of compliance with the specifications.

- Authorization to stop a work task or series of tasks after consultation with the site supervisor and NTR in the event that severe weather conditions interfere with quality of work.

- Responsible for testing construction and backfill materials for compliance with specifications and authorized to reject materials to be used if they are not in compliance.

- Establish and maintain a Rework Items List program and a tracking and/or suspense system to monitor and assure inspection and testing activities and frequencies are in accordance with the contract requirements. This list will be submitted on a monthly basis.

- Attend and assist the Government at the pre-final inspection and final acceptance inspection.

- Assist in preparing Contractor Production Report.

- Prepare and submit daily Contractor QC Report.

- Prepare, maintain, and continually update the Construction Testing Plan and Log for the field activities.

- Conduct and document weekly QC meetings on site.

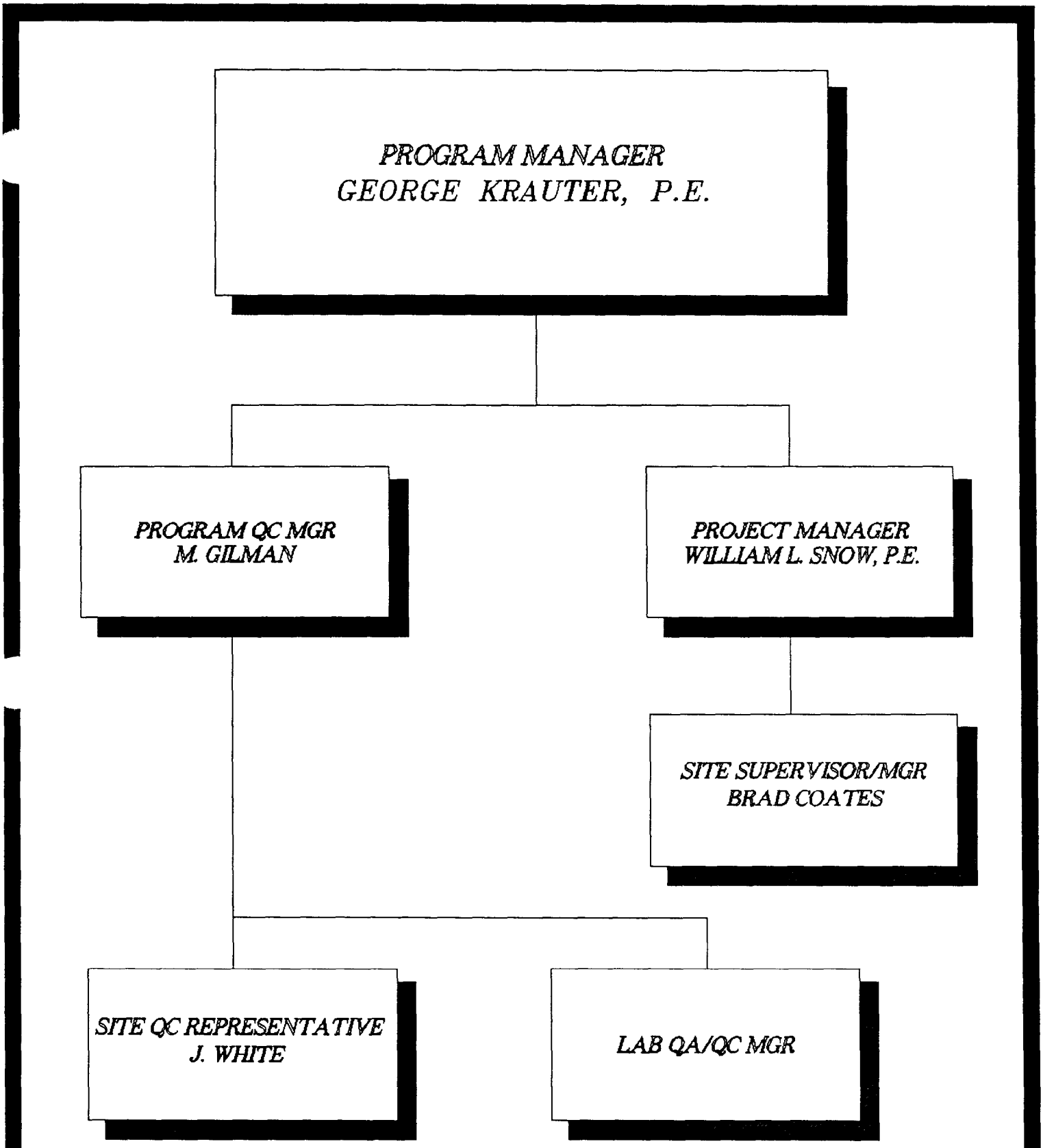

FIGURE 1
QC ORGANIZATION CHART
MELVILLE NORTH LANDFILL
NEWPORT, RHODE ISLAND

DEPARTMENT OF THE NAVY
NORTHERN DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
LESTER, PENNSYLVANIA

3.0 METHODS OF INSPECTION

A three-phase control system will be implemented for each major work task and will include preparatory, initial, and follow-up inspections. The QC representative will assure that no work proceeds until the appropriate inspections have been performed. An inspection schedule listing the expected major phases of work for which the inspections will be conducted is presented in Table 1. In addition to, and independent of the site QC representative, the site safety officer (SSO) and the site supervisor will implement this same control system as part of their normal duties/responsibilities. The inspection phases are discussed in the following paragraphs.

A preparatory inspection will be performed by the site QC representative prior to beginning physical work. This will include a review of contract requirements; a check of the data sheets to assure that materials and/or equipment have been tested, submitted, and approved; a check to assure that provisions for required control testing have been made; and a physical examination of materials and drawings or submittal data and that material and/or equipment are on hand.

As a part of this preparatory work, the site QC representative will review shop drawings, certificates, and other submittal data prior to submission to the NTR. Each submittal presented to the NTR will bear the date and the signature of the site QC representative indicating that the submittal has been reviewed and is in compliance with plans and specifications or shows the required changes to meet the specifications. The NTR will be notified a minimum of 24-hours prior to the beginning of the preparatory inspection.

An initial inspection will be performed by the site QC representative as soon as a representative segment of the particular item of work has been accomplished. The initial inspection will include examination of the quality of workmanship and a review of control testing results for compliance with contract requirements, use of defective or damaged materials, omissions, and dimensional requirements.

Follow-up inspections will be performed by the site QC representative daily or as frequently as necessary to assure continuing compliance with contract requirements, including control testing, until completion of the particular segment of work.

In addition to this three-phase inspection control system, special inspections or testing may be conducted in the event of an approved change or modification to work plans or field operations. The QC representative will coordinate scheduling of special inspections with the Contracting Officer at the time when a change or modification in work operations has been approved.

It is OHM's responsibility to identify and correct deficiencies in the work. To ensure that defective work is corrected and not built upon, a Rework Items System will be implemented. Rework items identified in the work during any of the inspections or testing programs by a party to this contract will be corrected as soon as practicable and recorded by completing a Rework Items List. The list will be issued to the site supervisor and a copy attached to the inspection report. The QC site representative will be responsible for obtaining correction by the responsible party and will return the notice report upon correction with a description of the action taken and date completed. The list will be updated accordingly. Rework items will be corrected prior to the final inspection. Copies of the Rework Items List are presented in the Program QC Plan and Procedures.

Safety inspections will be performed by the SSO on a daily basis to assure compliance with occupational health and safety requirements of the contract. Daily QC reports will be used to document the safety inspection and other inspections, and will address the safety deficiencies observed and corrective actions taken.

In addition to site QC representative directed inspections, standard inspections will be performed during the course of remediation to verify the quality of the final construction work. There will be visual inspections performed by the site supervisor, a qualified general foreman, or other appropriate personnel. These inspections are supplemental to the site QC inspections and are intended to enhance the QC inspections by identifying problem areas that may require more stringent QC inspection. In the event of a discrepancy between one of these visual inspections and the field verification test performed as per this document, the field verification test result will take precedence.

Inspections will be performed in accordance with this plan and checklists developed for the remediation. Inspections performed to a guide procedure will be documented in the daily field log while inspections performed to a checklist will be documented on the checklist.

INSPECTION SCHEDULE
REMOVAL ACTION
MELVILLE NORTH LANDFILL
NAVAL EDUCATION AND TRAINING CENTER
NEWPORT, RHODE ISLAND

ACTIVITY	PREPARATORY	DONE	INITIAL	DONE	FOLLOW-UP	DONE
Decontamination pad	Limits of scope established Material meets specification Location defined		Proper installation Proper grades		Decontamination liquids recovered Area restored	
Clearing and grubbing	Determine extent		Survey stakeout		Complete removal/staging of organic material	
Excavation	Initial limits of area & depth defined		Visual inspection of excavation/site subgrade - no sharp or deleterious materials limit mixing of soils with different levels/types of contamination as much as possible		Ongoing inspection	
Transportation of excavated material	Truck liners (if required) Truck covers (if required)		Monitoring for spillage during loading and unloading		Road condition and roadway spillage at completion	
Temporary construction dewatering	Proper design and materials		Ensure free-product is separated from aqueous liquids		Proper off-site disposal Documentation/manifests	

TABLE . ntinued)
INSPECTION SCHEDULE

ACTIVITY	PREPARATORY	DONE	INITIAL	DONE	FOLLOW-UP	DONE
Sampling and analysis	Approved laboratory selected Sampling and laboratory procedures established		Quality control of sampling and analysis procedures Chain-of-custody maintained		Data inspection/evaluation	
Erosion control	Materials and design meet specifications Alignment/proper location		Proper installation Proper alignment and location		Maintenance and ongoing inspection	
Backfill and compaction	Limits defined Testing requirements specified Excavated areas approved for backfilling		Backfill material testing and meets compaction specification		Meets grades	
Topsoil and seeding	Proper mixture meets specification Chemical analysis (if required)		Topsoil thickness Limits of placement		Proper grades restored to plans	

4.0 SAMPLING PROCEDURES

OHM sampling procedures will meet the requirements of the project scope of work. The sampling procedures, as described in the Sampling and Analysis Plan, shall be used for the control of field testing various materials and processes.

5.0 FIELD VERIFICATION TESTING

The following requirements will be used by the OHM site QC representative during the performance of his/her duties to verify compliance with the contract requirements. Additions or modifications to these requirements may be necessary to address changing circumstances. The responsibilities of the site QC representative are fully described in Section 2.0 of this QC Plan.

5.1 GENERAL REQUIREMENTS

Verification of field testing requirements will be performed in accordance with this plan. OHM will witness/verify on a sampling basis the tests performed by the contractors/suppliers as required by the project installation specifications. Additional testing that may be required by the QC representative of the project such as specific field verification testing will be performed in accordance with this plan. OHM will utilize a testing agency (agencies), to be named later, for various types of field testing requirements. The testing laboratories used in the testing shall have a QA program acceptable for this project. The equipment/measurements used in testing shall be calibrated on regular intervals and all measurements shall be traceable to national bureau of standards. In the event that any single test fails to meet the specification requirements, a second test will be performed. Should the second test fail, the appropriate corrective action will be taken in the field. If the second test meets the specification requirements, then the corresponding verification test will be conducted. The results of that test will then be used to determine the acceptance or rejection of the construction task, or equipment/material being monitored.

5.2 FIELD TESTING

Soil removed during excavation operations, soil used as backfill, aqueous material from dewatering activities, etc. will be field tested using on-site screening procedures and off-site laboratories as described in the Sampling and Analysis Plan. An independent testing laboratory qualified to perform analyses required by the contract will be utilized and proof of EPA/State laboratory certification for environmental samples will be provided. The QC representative will ensure that all sampling QC procedures, as specified in the Sampling and Analysis Plan, are performed.

The site QC representative will review the QC data to verify that remediation specifications are being met, or to determine when defective material or work may require removal and/or reconstruction, and to determine when additional testing may be required to confirm the quality of the material or work. The results of field tests, field inspections, receiving inspections, and surveys will be reviewed by the site QC representative. The review will be made on a daily basis to prevent the construction of new work over defective material or work which is later found to be defective.

6.0 INSPECTION AND TESTING DOCUMENTATION

6.1 DAILY RECORDS

Daily records of inspections and tests performed for each shift or subcontractor operation will be signed by the site QC representative and the original and one copy provided to the NTR no later than the next working day. Samples of reports and forms to be utilized are included in the Program QC Plan.

The site QC representative will prepare a daily CQC report/production report which will include, as a minimum, the following:

- Project identification
- Data on weather and any delays attributable to such weather
- Number of personnel on site (OHM and subcontractors)
- A listing of construction equipment and an indication of equipment usage on the report day
- Factual evidence that continuous QC inspections and tests have been performed. This includes, but is not limited to, the following data:
  - Type and number of inspections or tests performed
  - Results of inspections or tests, including computations
  - Evaluation of test results--accept or reject work
  - Nature of defects, if present
  - Causes for rejection
  - Safety inspections/violations
  - Proposed remedial action
  - Corrective actions taken
- The records will cover both conforming and non-conforming work
- A statement that supplies and materials incorporated into the work are in full compliance with the requirements of the contract

6.2 PERFORMANCE DOCUMENTATION

Construction inspection personnel (site supervisor, foreman, and site QC representative) will keep a daily log of project activities. Whenever possible, information will be recorded on a standardized form or in a bound field logbook. Documentation will include a daily log of construction activities; the appropriate field test, laboratory test, and survey data forms; photographs; and field collection and sample custody forms. Copies of the daily logs will be sent to the site supervisor on a daily basis. After review of the logs, they will be routed to other members of the project team as needed.

As part of the remediation control activities, a photographic record is to be prepared. Photographs will be in color. As examples, photographs could be taken of field testing, sampling locations, remediation processes, and final constructed features.

Photographs are to be identified with the project number, date taken, and a brief description. This may be done individually on the back of the photographs or in an album in which the photographs are mounted. Album photographs must be provided with individual descriptions and dates taken.

Appropriate remediation control test, survey, and material installation data forms will also be prepared. They will include the activity location. All requested information will be addressed. If not applicable, requested information will be designated as such. Results of field and laboratory testing will be sent to the NTR, the project manager, and site supervisor as soon as they become available.

Field construction verification records will be collected and maintained by the site supervisor until they are submitted to the project central file.

6.3 AS-BUILT DOCUMENTATION

All appropriate documentation will be retained in the project records system to provide documentation of how the remedial action was actually built. Final as-built drawings and specifications will be prepared utilizing this information and retained as a permanent record of the final location, dimensions, and orientation of the construction.

At contract closeout, record documents will be delivered to the NTR. A transmittal letter in duplicate accompanying the submittal will contain:

- Date
- Contract name and number
- Contractor's name, address, and telephone number
- Number and title of each record document
- Signature of contractor or his authorized representative.

6.4 SUBMITTAL REGISTER

The submittal register at the end of this section has been generated based on the requirements set forth in each individual specification section of NAVFAC Spec. No. 04930293 dated March 1994. This register will be maintained in the field office by the site QC representative and will be available for review by the NTR.

7.0 MEETINGS/COORDINATION

7.1 COORDINATION AND MUTUAL UNDERSTANDING MEETING

After submission of the QC plan addendum and prior to the start of construction, OHM's project manager, program QC manager, and site QC representative will meet with the COTR and the NTR to discuss the QC program required by this delivery order. The purpose of this meeting is to develop a mutual understanding of the QC details, including forms to be used; administration of on-site and off-site work; and coordination of the OHM management, production, and the QC representative's duties with the NTR. Minutes of the meeting will be prepared by the QC manager and signed by both OHM and the COTR. This meeting may be combined with the pre-construction meeting.

7.2. QC MEETINGS

After the start of construction, the OHM site QC representative will conduct QC meetings once every week or as required by the COTR/delivery order at the work site, or where specified, with the site supervisor, the foreman responsible for the upcoming work, and the NTR. The OHM site QC representative will prepare the minutes of the meeting and provide a copy to the COTR within two working days after the meeting. The site QC representative will notify the NTR at least 48 hours in advance of each meeting. As a minimum, the following will be accomplished at each meeting:

- Review the minutes of the previous meeting.
- Review the schedule and the status of work:
  - Work or testing accomplished since last meeting
  - Rework items identified since last meeting
  - Rework items completed since last meeting
- Review status of submittals:
  - Submittals reviewed and approved since last meeting
  - Submittals required in the near future
- Review work to be accomplished in the next week and documentation required. Schedule the three phases of control and testing:
  - Establish completion dates for rework items
  - Preparatory phases required
  - Initial phases required
  - Follow-up phases required
  - Testing required
  - Status of off-site work or testing
  - Documentation required.
- Resolve QC and production problems
- Address items that may require revising the QC plan
  - Changes in procedures
  - Changes in QC organization personnel.

ATTACHMENT A

PROFESSIONAL PROFILES

TABLE 2

SUBMITTAL REGISTER

Removal Action

Melville North Landfill - Navy Education and Training Center - Newport, RI

Delivery Order 0025 Project Number: 16143

Contract No. N62470-93-D-3032 Project Title: Removal Action for Melville North Landfill Location: Newport, Rhode Island Contractor: OHM Remediation Services Corp.

								Contractor Action			Approving Authority Action				Contractor	
Submittal No.	Spec Section No.	SD No., and Type of Submittal Material or Product	Spec Para No.	Classification Approval by Contracting Officer *	Government or A/E Reviewer	Transmittal Control No.	Planned Submittal Date	Action Code	Date of Action	Date Forward to Approved Authority/ Date Received From Contractor	Date Forwarded to other Reviewer	Date Received from other Reviewer	Action Code	Date of Action	Mailed to Contractor/ Received from Approved Authority	Remarks
(a)	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)
	01010	SD-18														
		Records	1.2.1													
		Report of subcontracts	1.2.1.1	G	ROICC											
		Work performed by contractor	3.3.2	G	ROICC											
		Required insurance	1.9.2	G	ROICC											
		Schedule of prices	1.11	G	ROICC											
		As-built drawings	1.15.1	G	ROICC											
		Quantity surveys	1.16	G	ROICC											
	01011	SD-18														
		Records	1.3.1													
		Construction schedule	1.3.1.1	G	ROICC											
		Equipment delivery schedule	1.3.1.2	G	ROICC											
		Monthly update	1.3.1.4	G	ROICC											
		Accident Prevention Plan	3.3.4	G	ROICC											
	01300	SD-18														
		Records	1.2.1													
		Submittal register	1.2.1.1	G	ROICC											
	01400	SD-18														
		Records	1.2.1													
		Quality Control (QC) Plan	1.6	G	ROICC											
	01560	SD-18														
		Records	1.4.1													
		Solid waste disposal permit	1.4.1.1	G	ROICC											

TABLE 2

SUBMITTAL REGISTER

Removal Action

Melville North Landfill - Navy Education and Training Center - Newport, RI

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(a)	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)
	02102	SD-04														
		Drawings	1.2.1													
		Clearing and grubbing plan		G	A/E											
	02220	SD-04														
		Drawings	1.3.1													
		Drawings	1.3.1.1	G	A/E											
	02220	SD-05														
		Design data	1.3.2													
		Calculations	1.3.2.1	G	A/E											
	02220	SD-08														
		Statements	1.3.3													
		Supporting systems	3.2.1	G	A/E											
	02220	SD-12														
		Field test reports	1.3.4													
		Fill and backfill	3.8.2.1	G	A/E											
	02990	SD-08														
		Statements	1.7.1													
		Testing of sidewall sampling and analysis plan		G	A/E											
		Qualifications		G	A/E											
		Spill and discharge control plan	1.7.1.3	G	A/E											
		Spill and discharge control plan	3.2	G	A/E											

TABLE 2

SUBMITTAL REGISTER

Removal Action

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								Action Code	Date of Action	Date Forward to Approved Authority/ Date Received From Contractor	Date Forwarded to other Reviewer	Date Received from other Reviewer	Action Code	Date of Action	Mailed to Contractor/ Received from Approved Authority	
(a)	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)
		Off-site disposal plan		G	A/E											
		Dewatering plan	1.7.1.5	G	A/E											
	02990	SD-09														
		Reports	1.7.2													
		Laboratory testing reports	3.8													
	02990	SD-18														
		Records	1.7.3													
		Results of excavation	3.8	G	A/E											
		Contaminated soil disposal paperwork	3.8	G	A/E											
		Contaminated water disposal paperwok	3.8	G	A/E											
	02995	SD-08														
		Statements	1.3.1													
		Site Health and Safety Plan		G	A/E											
		Qualifications	1.3.1.2	G	A/E											

*Navy Notes:
Approved By:
G: Contracting Officer
Blank: CQC Manager

*NASA Notes:
Approved By:
Blank: Contracting Officer

*Army Notes:
Classification:
GA: Government Approval
FIO: For Information Only

DEPARTMENT OF THE NAVY
NORTHERN DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
10 INDUSTRIAL HIGHWAY MAIL STOP NO. 82
LESTER, PA 19113-2090

SPECIFICATION NO.:
NO. 04-93-0293

CONTRACT NO.:
N62472-93-C-0293

APPROPRIATION:
DERA

REMOVAL ACTION FOR MELVILLE NORTH LANDFILL

at the
NAVAL EDUCATION AND TRAINING CENTER
NEWPORT, RHODE ISLAND

DESIGN BY:

TRC ENVIRONMENTAL CORPORATION
5 WATERSIDE CROSSING
WINDSOR, CONNECTICUT 06095

SPECIFICATION PREPARED BY:

Architectural:	Civil:	Structural:
N/A	Carl M Stopper	N/A
Electrical:	**Mechanical:**	**Submitted by:**
N/A	N/A	Robert C. Smith

Date: March 18, 1994

SPECIFICATION APPROVED BY: Russell J. Hiett DATE: 4-1-94

April 1, 1944

From: Code 406
To: Code 02

Subj: Bid Items for Contract N62472-93-C-0239
REMOVAL ACTION FOR MELVILLE NORTH LANDFILL
NAVAL EDUCATION AND TRAINING CENTER
NEWPORT, RI

1. Project will be bid as one lump sum price for the complete work.

THE FOLLOWING INFORMATION HAS TO BE ADDED TO "NOTICE TO BIDDERS", IT'S NO LONGER IN SECTION 01011.

BIDDING DOCUMENTS

Bidders may obtain documents by calling Ms. S. Brown at 215-595-0639. For bidding purposes prime contractors will be furnished two sets of half-size prints of the contract drawings and two copies of the specifications and the principal subcontractors will be furnished one set of half-size prints of the contract drawings and one copy of the specifications. Additional sets of full size drawings may be acquired at the bidder's expense from the following reproduction agency:

PROVIDENCE REPROGRAHICS
681 WESTMINSTER ST.
PROVIDENCE, RI 02903
401-272-9060

Set of the contract drawings and specifications are available for examination at the following office:

OFFICER IN CHARGE
NAVAL ACTIVITIES
NARRAGANSETT BAY AREA
NEWPORT, RI 02840
401-841-2543/44

PROJECT TABLE OF CONTENTS

-- End of Project Table of Contents --

SECTION 01010

GENERAL PARAGRAPHS

PART 1 GENERAL

1.1 REFERENCE

The publication listed below form a part of this specification to the extent referenced. The publication is referred to in the text by the basic designation only.

CODE OF FEDERAL REGULATIONS (CFR)

41 CFR 60.4	Construction Contractors - Affirmative Action Requirements

1.2 SUBMITTALS

Submit the following in accordance with Section 01300, "Submittals."

1.2.1 SD-18, Records

a. Report of subcontracts G

b. Work performed by Contractor G

c. Certification of Contractor required insurance G

d. Schedule of prices G

e. As-built drawings G

1.2.1.1 Report of Subcontracts

Provide, for contracts greater than $10,000, in accordance with paragraph entitled Affirmative Action Compliance."

1.2.1.2 Work Performed by Contractor

Provide in accordance with the paragraph entitled, "Description of Work Performed by the Contractor."

1.3 GENERAL INTENTION

It is the declared and acknowledged intention and meaning to provide and secure removal action from landfill, complete and ready for use.

1.4 GENERAL DESCRIPTION

The work includes the removal and disposal of contaminated soils; the provision of backfill with clean soils, grading, and turf; and

incidental related work.

1.5 LOCATION

The work shall be located at the Naval Education and Training Center, Newport, Rhode Island, approximately as shown. The exact location will be indicated by the Contracting Officer.

1.6 GOVERNMENT REPRESENTATIVES

a. The work will be under the general direction of an officer of the Civil Engineer Corps, United States Navy or another officer or representative of the Government, designated in block 26 of Standard Form 1442. Except in connection with the Disputes Clause of this contract, this designated person has complete charge of and exercise full supervision over the work so far as it affects the interests of the Government.

b. For the purposes of the Dispute Clause, the "Contracting Officer" is the Commander, Naval Facilities Engineering Command, or his representatives warranted for this purpose. Any claim submitted under the Dispute Clause shall be submitted to the Contracting Officer in care of the person designated in block 26 of Standard Form 1442 as the representative of the Contracting Officer authorized to receive the claim.

c. The provisions of this paragraph or provisions elsewhere in this contract regarding supervision, approval, or direction by the Contracting Officer or the designated person shall not relieve the Contractor of responsibility for accomplishing the work, with regard to sufficiency or time of performance, except as other wise provided.

1.7 AFFIRMATIVE ACTION COMPLIANCE

Notice of requirement for affirmative action to ensure equal employment opportunity (Apr 1984):

(Applies when the amount of the contract is in excess of $10,000.)

a. The offeror's attention is called to the Equal Opportunity clause and the Affirmative Action Compliance Requirements for Construction clause of this solicitation.

b. The goals for minority and female participation, expressed in percentage terms for the Contractor's aggregate workforce in each trade on all construction work in the covered area, are as follows:

Goals for minority participation for each trade	Goals for female participation for each trade
3.1 percent	6.9 percent

These goals are applicable to all the Contractor's construction work performed in the covered area. If the Contractor performs construction work in a geographical area located outside of the covered area, the Contractor shall apply the goals established for the geographical area where the work is actually performed. Goals are published periodically in the Federal Register in notice form, and these notices may be obtained from any Office of Federal Contract Compliance Programs office.

c. The Contractor's compliance with Executive Order 11246 as amended, and the regulations in 41 CFR 60.4 shall be based on (1) its implementation of the Equal Opportunity clause, (2) specific affirmative action obligations required by the clause entitled "Affirmative Action Compliance Requirements for Construction," and (3) its efforts to meet the goals. The hours of minority and female employment and training must be substantially uniform throughout the length of the contract, and in each trade. The Contractor shall make a good faith effort to employ minorities and women evenly on each of its projects. The transfer of minority or female employees or trainees from Contractor to Contractor, or from project to project, for the sole purpose of meeting the Contractor's goals shall be a violation of the contract, Executive Order 11246, as amended, and the regulations in 41 CFR 60.4. Compliance with the goals will be measured against the total work hours performed.

d. The Contractor shall provide written notification to the Director, Office of Federal Contract Compliance Programs, within 10 working days following award of any construction subcontract in excess of $10,000 at any tier for construction work under the contract resulting from this solicitation. The notification shall list the--

(1) Name, address, and telephone number of the subcontractor;

(i) Employer identification number of the subcontractor;

(2) Estimated dollar amount of the subcontract;

(3) Estimated starting and completion dates of the subcontract; and

(4) Geographical area in which the subcontract is to be performed.

e. As used in this Notice, and in any contract resulting from this solicitation, the "covered area" is Newport county in Rhode Island. (FAR 52.222-23)

1.8 ORAL MODIFICATION

No oral statement by any person other than the Contracting Officer or his representative, as provided in the Contract Clause entitled "Changes," will in any manner or degree modify or otherwise affect the terms of this contract.

1.9 INSURANCE

1.9.1 Minimum Requirements

The Contractor shall procure and maintain during the entire period of performance under this contract the following minimum insurance coverage:

a. Comprehensive general liability: $500,000 per occurrence

b. Automobile liability: $200,000 per person; $500,000 per occurrence, $20,000 per occurrence for property damage

c. Workmen's compensation: As required by Federal and State workers' compensation and occupational disease laws

d. Employer's liability coverage: $100,000, except in States where workers compensation may not be written by private carriers

e. Others as required by State law.

1.9.2 Insurance--Work on a Government Installation (SEP 1989)

a. The Contractor shall, at its own expense, provide and maintain during the entire performance period of this contract at least the kinds and minimum amounts of insurance required in the Schedule or elsewhere in the contract.

b. Before commencing work under this contract, the Contractor shall certify to the Contracting Officer in writing that the required insurance has been obtained. The policies evidencing required insurance shall contain an endorsement to the effect that any cancellation or any material change adversely affecting the Government's interest shall not be effective (1) for such period as the laws of the State in which this contract is to be performed prescribe or (2) until 30 days after the insurer or the Contractor gives written notice to the Contracting Officer, whichever period is longer.

c. The Contractor shall insert the substance of this clause, including this paragraph (c), in subcontracts under this contract that require work on a Government installation and shall require subcontractors to provide and maintain the insurance required in the Schedule or elsewhere in the contract. The Contractor shall maintain a copy of all subcontractors' proofs of required insurance, and shall make copies available to the Contracting Officer upon request. (FAR 52.228-5)

1.10 NO WAIVER BY THE GOVERNMENT

The failure of the Government in any one or more instances to insist upon strict performance to any of the terms of this contract or to exercise any option herein conferred shall not be construed as a waiver or relinquishment to any extent of the right to assert or rely upon such terms or option on any future occasion.

1.11 SCHEDULE OF PRICES

1.11.1 Data Required

Within 5 days after award of the Contract, the Contractor shall prepare and deliver to the Officer in Charge of Construction a schedule of prices (construction contract) on the forms furnished for this purpose. The schedule of prices shall consist of a detailed breakdown of the contract price, giving the quantities for each of the various kinds of work; the unit prices; and the total prices therefore. The required schedule must be based on the actual breakdown of the bid price. The format, content, and number of copies required will be prescribed by the Officer in Charge of Construction and will be subject to his approval. The submission of the required data shall not otherwise affect the contract terms.

1.11.2 Submittal Instructions

Furnish four copies of the schedule of prices in accordance with the paragraph entitled "Data Required." Payments will not be made pursuant to the Contract Clause entitled "Payments to Contractor" until the schedule of prices has been submitted to and approved by the Contracting Officer.

1.12 PAYMENTS TO THE CONTRACTOR

Payments made in accordance with the Contract Clause entitled "Payments Under Fixed-Price Construction Contract" will be made on submission of itemized requests by the Contractor and will be subject to reduction for overpayments or increase for underpayments on preceding payments to the Contractor.

1.12.1 Payment for Materials Offsite

Pursuant to the paragraph entitled "Payments to the Contractor," payments may be made to the Contractor for materials stored off construction sites. However, the following conditions must be met:

a. The conditions described in the paragraph entitled "Payments to the Contractor."

b. The material must be within a distance of 50 miles by streets and roads.

c. The materials shall be adequately insured and protected from theft and exposure.

d. The materials shall not be susceptible to deterioration or physical damage in storage or in transit to the jobsite. Items such as steel, machinery, pipe and fittings, and electrical cable are acceptable for progress payments; items such as gypsum wallboard, glass, insulation, and wall coverings are not. Payments will not be made for materials in transit to the jobsite or storage site.

1.12.2 Obligation of Government Payments

The obligation of the Government to make any of the payments required under any of the provisions of this contract shall, in the discretion of the Officer in Charge of Construction, be subject to:

a. Reasonable deductions on account of defects in material or workmanship; and

b. Any claims which the Government may have against the Contractor under or in connection with this contract. Any overpayments to the Contractor shall, unless otherwise adjusted, be repaid to the Government upon demand.

1.13 CONTRACTOR'S INVOICE AND CONTRACT PERFORMANCE STATEMENT

Requests for payment in accordance with the terms of the contract shall consist of:

a. The Contractor's invoice on the form furnished for this purpose, which shall show, in summary form, the basis for arriving at the amount of the invoice; and

b. The contract performance statement on the form furnished for this purpose, which shall show, in detail, the estimated cost percentage of completion and value of completed performance for each of the construction categories stated in this contract. The format, content, and number of copies required will be prescribed by the Officer in Charge of Construction and will be subject to his approval. The submission of the required data will not otherwise affect the contract terms.

1.14 EQUITABLE ADJUSTMENTS - WAIVER AND RELEASE OF CLAIMS

a. Whenever the Contractor submits a claim for equitable adjustment under any clause of this contract which provides for equitable adjustment of the contract, such claim shall include all types of adjustments in the total amounts to which the clause entitles the Contractor, including, but not limited to, adjustments arising out of delays or disruptions or both caused by such change. Except as the parties may otherwise expressly agree, the Contractor shall be deemed to have waived: (1) any adjustments to which he otherwise might be entitled under the clause where such claim fails to request such adjustments; and (2) any increase in the amount of equitable adjustments additional to those requested in his claim.

b. The Contractor agrees that, if required by the Contracting Officer, he shall execute a release, in form and substance satisfactory to the Contracting Officer, as part of the supplemental agreement setting forth the aforesaid equitable adjustment. The Contractor further agrees that such release shall discharge the Government, including its officers, agents, and employees, from any further claims, including, but not limited to, further claims arising out of delays and/or disruptions caused by the aforesaid change.

1.15 AS-BUILT RECORDS

1.15.1 As-Built Drawings

Maintain at the jobsite two sets of full-size contract drawings marked to show any deviations which have been made from the contract drawings, including buried or concealed construction and utility features revealed during the course of construction. Record the horizontal and vertical location of all buried utilities that differ from the contract drawings. These drawings shall be available for review by the Contracting Officer at all times. Upon completion of the work, deliver the marked sets of prints to the Contracting Officer. Requests for partial payments will not be approved if the marked prints are not current, and request for final payment will not be approved until the marked prints are delivered to the Contracting Officer.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

3.1 STATION REGULATIONS

The Contractor and his employees and subcontractor shall become familiar with and obey all station regulations, including fire, traffic, and security regulations. All personnel employed on the station shall keep within the limits of the work (and avenues of ingress and egress) and shall not enter any restricted areas unless required to do so and are cleared for such entry. The Contractor's equipment shall be conspicuously marked for identification.

3.1.1 Working Hours

Regular working hours shall consist of an 8 1/2-hour period established by the Contracting Officer between 7 a.m. and 5 p.m., Monday through Friday, excluding Government holidays. The Contractor shall make application for work outside regular working hours 15 calendar days prior to such work in accordance with the paragraph entitled "Work Outside Regular Hours."

3.1.2 Work Outside Regular Hours

If the Contractor desires to carry on work outside regular hours, including Saturdays, Sundays, and Government holidays, an application shall be delivered to the Officer in Charge of Construction. The Contractor shall allow ample time to enable satisfactory arrangements to be made by the Government for inspecting the work in progress. During periods of darkness, the different parts of the work shall be lighted in a manner approved by the Officer in Charge of Construction. All utility cutovers shall be made after normal working hours or on Saturdays, Sundays, and Government holidays. Anticipated costs shall be included in the bid.

3.2 ORDER OF WORK

The Contractor shall schedule his work so as to cause the least amount of interference with station operations. Work schedules shall be subject to the approval of the Officer in Charge of Construction. Permission to interrupt any station roads, railroads, and/or utility service shall be requested in writing a minimum of 15 calendar days prior to the desired date of interruption.

3.3 WORK BY THE CONTRACTOR

3.3.1 Performance of Work by the Contractor (APR 1984)

The Contractor shall perform on the site, and with its own organization, work equivalent to at least twenty (20) percent of the total amount of work to be performed under the contract. This percentage may be reduced by a supplemental agreement to this contract if, during performing the work, the Contractor requests a reduction and the Contracting Officer determines that the reduction would be to the advantage of the Government. (FAR 52.236-1)

3.3.2 Description of Work Performed by Contractor

In addition to the requirements of the paragraph entitled "Performance of Work by the Contractor (APR 1984)" and prior to the commencement of work at the site, furnish to the Contracting Officer a description of the work to be performed with the Contractor's own organization and the percentage of the total amount of work to be performed under the contract which this represents. Consider the value of materials as part of the work performed by the Contractor only if the materials are to be installed on the site by the Contractor's own organization.

3.4 EXISTING WORK

a. The removal or altering in any way of existing work shall be carried on in such a manner as to prevent injury or damage to any

portion(s) of the existing work which remain(s).

b. All portions of existing work which have been altered in any way during construction operations shall be repaired or replaced in kind and in a manner to match existing or adjoining work, as approved by the Contracting Officer. All work of this nature shall be performed by the Contractor at the Contractor's expense and shall be performed as directed by the Officer in Charge of Construction. At the completion of all operations, existing work shall be in a condition equal to or better than that which existed before the new work started.

3.5 SANITATION

Adequate sanitary conveniences of a type approved for the use of persons employed on the work shall be constructed, properly secluded from public observation, and maintained by the Contractor in such a manner as required or approved by the Officer in Charge of Construction. These conveniences shall be maintained at all times without nuisance. Upon completion of the work, the conveniences shall be removed by the Contractor from the premises, leaving the premises clean and free from nuisance.

3.6 SPECIFICATIONS AND STANDARDS

The specifications and standards referenced in this project specification, including addenda, amendments, and errata listed, will govern in all cases where references thereto are made. In case of differences between these specifications or standards and this project specification or its accompanying drawings, this project specification and its accompanying drawings will govern to the extent of such differences. Otherwise, the referenced specifications and standards will apply. The requirement for packaging, packing, marking, and preparation for shipment or delivery included in the referenced specifications will apply only to materials and equipment that are furnished directly to the Government and not to materials and equipment that are to be furnished and installed by the Contractor.

3.7 OPTIONAL REQUIREMENTS

Where a choice of materials or methods, or both, is permitted in this contract, the Contractor will be given the right to exercise the option unless otherwise required by the specification.

3.8 GENERAL PROVISIONS

Any reference within this project specification to a General Provision shall be understood to be a reference to the Contract Clause(s) or the General Paragraph(s) addressing the subject matter of the particular reference.

-- End of Section --

SECTION 01011

ADDITIONAL GENERAL PARAGRAPHS

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only.

CODE OF FEDERAL REGULATIONS (CFR)

29 CFR 1926.59	Hazard Communication

CORPS OF ENGINEERS (COE)

COE EM-385-1-1	1992 Safety and Health Requirements Manual
COE 1-1-11	1985 Network Analysis Systems, October 15

1.2 PROJECT INFORMATION

1.2.1 Contract Drawings, Maps, and Specifications (SEP 1987)

a. 5 sets of large-scale contract drawings and specifications will be furnished to the Contractor without charge except applicable publications incorporated into the technical sections by reference. Additional sets will be furnished on request at the cost of reproduction. One set of reproducibles will be furnished to the Contractor. The work shall conform to the specifications and the following contract drawings identified on the following index of drawings.

b. Omissions from the drawings or specifications or the misdescription of details of work which are manifestly necessary to carry out the intent of the drawings and specifications, or which are customarily performed, shall not relieve the Contractor from performing such omitted or misdescribed details of the work but they shall be performed as if fully and correctly set forth and described in the drawings and specifications.

c. The Contractor shall check all drawings furnished him immediately upon their receipt and shall promptly notify the Contracting Officer of any discrepancies. Figures marked on drawings shall in general be followed in preference to scale measurements. Large scale drawings shall in general govern small scale drawings. The Contractor shall compare all drawings and verify the figures before laying out the work and will be responsible for any errors which might have been avoided thereby.

(DFARS 252.236-7002)

1.2.2 Drawing Numbers

NAVFAC DRAWING NO.	TITLE
2164976	Title Sheet, Index and Location Map
2164977	Existing Conditions and Site Prepartation Map
2164978	General Site Plan
2164979	Final Grading Plan
2164980	General Site Details
2164981	Soil Boring Logs
2164982	Soil Boring Logs

1.2.3 Boring Logs

NAVFAC Drawing Nos 2164981 and 2164982 indicate the information obtained by Government investigation. The Government does not guarantee that borings indicate actual conditions, except for the exact locations and the time that they were made.

1.3 SUBMITTALS

Submit the following in accordance with Section 01300, "Submittals."

1.3.1 SD-18, Records

a. Construction schedule G

b. Equipment delivery schedule G

c. Monthly update to construction schedule and equipment delivery schedules G

d. Accident Prevention Plan G

1.3.1.1 Construction Schedule

Within 15 days after award of the Contract, prepare and submit to the Contracting Officer for approval a feasible construction schedule in accordance with the clause of the Contract Clauses entitled "Schedules for Construction Contract," except as modified in this contract.

1.3.1.2 Equipment Delivery Schedule

Within 28 days after award of the Contract, submit to the Contracting Officer for approval, a schedule showing the procurement plans for materials, plant, and equipment. Submit in the format prescribed by the Contracting Officer, and include as a minimum the following information:

a. Description

b. Date of the purchase order

c. Promised shipping date

d. Name of the manufacturer or supplier

e. Date delivery is expected

f. Date the material or equipment is required, according to the current progress schedule or network.

1.3.1.3 Network Analysis System

As an alternative to the preceding construction and equipment delivery schedules, the Contractor may use the critical path method (CPM) or, subject to the approval of the Contracting Officer, some other system affording similar and equal information and control to that provided by the CPM. An example of one of the numerous acceptable types of network analysis systems is shown in Appendix A of COE 1-1-11. The use of one of these methods shall be subject to the terms of the clause of the Contract Clauses entitled "Schedules for Construction Contracts." Should the Contractor exercise the option to use a network analysis system, the Contractor also has the option of providing a schedule of prices in accordance with the paragraph of Section 01010, "General Paragraphs" entitled "Schedule of Prices" or providing a network analysis system, including costs.

1.3.1.4 Monthly Update to Schedules

Update the construction schedule and equipment delivery schedule at monthly intervals or as directed. Reflect any changes occurring since the last update. Submit copies of the purchase orders and confirmation of the delivery dates as directed. Update the construction schedules and equipment schedules with each invoice for progress payment in accordance with the clause of the Contract Clauses entitled "Schedules for Construction Contract."

1.4 ADDITIONAL INFORMATION REQUIRED OF THE CONTRACTOR

1.4.1 Subcontractors and Personnel

Reference is made to the clause of the Contract Clauses entitled "Subcontracts (Labor Standards)." In addition to the data required by that clause, provide a list of the key personnel of the Contractor and subcontractors (including addresses and telephone numbers) for use in the event of an emergency. As changes occur and additional information becomes available, correct and change the information contained in previous lists.

1.5 PROJECT SCHEDULE, PHASING, AND TIME CONSTRAINTS

1.5.1 Commencement, Prosecution, and Completion of Work (APR 84)

The Contractor shall be required to (a) commence work under this contract within 15 calendar days after award of the Contract, (b) prosecute the work diligently, and (c) complete the entire work ready for use not later than 180 calendar days after the required commencement of work. The time stated for completion shall include final cleanup of the premises.

(FAR 52.212-3)

1.5.1.1 Definitions

a. The date the Contracting Officer signs the SF 1442 is the date of the award of the contract.

b. A period of 15 days, after which contract time commences, is to allow for the mailing of the SF 1442 and the Contractor's submission and approval of the required bonds, Certificates of Insurance and Certification as to the percentage of work to be performed by the Contractor.

c. The contract time for the purpose of fixing the completion date shall begin to run 15 days from the date of award on the SF 1442, regardless of when the performance and payment bonds are executed."

1.5.2 Liquidated Damages - Construction (APR 84)

(FAR 52.212-5(a))

1.5.2.1 Failure to Complete Work

If the Contractor fails to complete the work within the time specified in the contract, or any extension, the Contractor shall pay to the Government as liquidated damages, the sum of $450.00.

(FAR 52.212-5(a))

1.5.2.2 Contractor Liability with Government Termination

If the Government terminates the Contractor's right to proceed, the resulting damage will consist of liquidated damages until such reasonable time as may be required for final completion of the work together with any increased costs occasioned the Government in completing the work.

(FAR 52.212-5(b))

1.5.2.3 Contractor Liability Without Government Termination

If the Government does not terminate the Contractor's right to proceed, the resulting damage will consist of liquidated damages until the work is completed or accepted.

(FAR 52.212-5(c))

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

3.1 FACILITIES AND SERVICES

3.1.1 Availability and Use of Utilities Services

The clause of the Contract Clauses entitled "Availability and Use of Utility Services" is not invoked. The Contractor shall provide his own utilities.

3.1.2 Contractor's Storage Area

The clause of the Contract Clauses entitled "Operations and Storage Areas" and the following apply:

3.1.2.1 Storage Size and Location

The open site available for storage shall be as indicated. The storage area will be approximately 20,000 square feet.

3.1.3 Temporary Buildings

Locate these where directed and within the indicated operations area.

3.1.3.1 Maintenance of Temporary Facilities

Suitably paint and maintain the temporary facilities. Failure to do so will be sufficient reason to require their removal.

3.2 RESTRICTIONS ON EQUIPMENT

3.2.1 Radio Transmitter Restrictions

Conform to the restrictions and procedures for the use of radio transmitting equipment, as directed. Do not use transmitters without prior approval.

3.3 RESTRICTIONS ON OPERATIONS

3.3.1 Restrictions Upon Interrupting Utility Services

The clause of the Contract Clauses entitled "Schedules for Construction Contract"; the paragraph of Section 01010, "General Paragraphs," entitled "Order of Work"; and the following apply:

a. Ensure that new utility lines are complete, except for the connection, before interrupting existing service.

3.3.2 Coordination With Other Work

The clause of the Contract Clauses entitled "Other Contracts" and the paragraph of Section 01010, "General Paragraphs", entitled "Order of Work" apply.

3.3.3 Security Requirements

No employee or representative of the Contractor will be admitted to the work site without satisfactory proof of United States citizenship or is

specifically authorized admittance to the work site by the Officer in Charge of Construction.

3.3.4 Accident Prevention Plan

Submit in writing an Accident Prevention Plan in accordance with Contract Clause titled "Accident Prevention" and the current edition of the U.S. Army Corps of Engineers "Safety and Health Requirements Manual" COE EM-385-1-1 in effect on the date of the solicitation. Prepare the Accident Prevention Plan following the guidelines found in Table 1-1, page 3 of COE EM-385-1-1. The Accident Prevention Plan shall also include a hazard communication program complying with the requirements of 29 CFR 1926.59 and COE EM-385-1-1. For each major phase of the work, prepare an activity hazard analysis as required by COE EM-385-1-1. The Contractor shall meet in conference with the Contracting Officer to discuss and develop mutual understandings relative to the overall safety program. Work at the construction site will not be permitted until the Accident Prevention Plan is approved by the Contracting Officer.

3.4 ACTIONS REQUIRED OF THE CONTRACTOR

3.4.1 Location of Underground Facilities

Verify the elevations of existing piping, utilities, and any type of underground obstruction not indicated or specified to be removed but indicated in locations to be traversed by piping, ducts, and other work to be installed. Verify the elevations before the new work is laid closer than the nearest manhole or other structure at which an adjustment in grade could be made. For additional work required by reason of conflict between new and existing work, an adjustment in contract price will be made in accordance with the clause of the Contract Clauses entitled "Differing Site Conditions."

3.4.2 Station Permits

Obtain these pursuant to the paragraph of Section 01010, "General Paragraphs," entitled "Station Regulations." Permits are required for, but are not necessarily limited to, welding, digging, and burning. Allow 7 calendar days for processing of the application.

3.4.3 Storm Protection

If a warning of gale force winds is issued, take precautions to minimize any danger to persons, and protect the work and any nearby Government property. Precautions shall include, but are not limited to, closing openings; removing loose materials, tools and equipment from exposed locations; and removing or securing scaffolding and other temporary work. Close openings in the work if storms of lesser intensity pose a threat to the work or any nearby Government property.

3.4.4 Unforeseen Hazardous Material

If material, not otherwise identified as hazardous, is encountered which may be dangerous to human health if disturbed during construction operations, the Contractor shall stop that portion of the work and avoid

coming in contact with the material. The Contractor shall immediately notify the Contracting Officer concerning the possible existence of hazardous material. The intent is to identify such potentially Hazardous materials as buried drums buried asbestos debris or other hazardous substances which may affect disposal or removal operations. Within 14 calendar days, the Government will perform testing to determine if the material is hazardous. If the material is not hazardous or poses no danger, the Contracting Officer will direct the Contractor to proceed without change. If the material is hazardous and must be disturbed or handled to accomplish the work, the Contracting Officer will direct a change pursuant to the Contract Clauses titled "Changes" and "Differing Site Conditions".

-- End of Section --

SECTION 01090

REFERENCES

PART 1 GENERAL

1.1 REFERENCES

Reference publications are cited in other sections of the specifications along with identification of their sponsoring organizations. The addresses of the sponsoring organizations are listed below, and if the source of the publications is different from the address of the sponsoring organization, that information is also provided.

AMERICAN PETROLEUM INSTITUTE (API)
1220 "L" Street, N.W.
Washington, DC 20005
Ph: 202-682-8000 Fax: 202-962-4776
Ph: 202-682-8030 Fax: 202-682-8375 (Publications)

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)
1916 Race Street
Philadelphia, PA 19103-1187
Ph: 215-299-5400 Fax: 215-977-9679
215-299-5585 (Publications)

CODE OF FEDERAL REGULATIONS (CFR)
Superintendent of Documents
Government Printing Office
Washington, DC 20402
Ph: 202-783-3238 Fax: 202-512-2250

COMMERCIAL ITEM DESCRIPTIONS (CID)
Defense Printing Service (DPS)
ATTN: Customer Service
Building 4D NPN-DODSSP
700 Robbins Avenue
Philadelphia, PA 19111-5094
Ph: Commercial: 215-697-2179/-2664
DSN: 442-2658/-2664 Fax: 215-697-2978
or
Order from:
General Services Administration (GSA)
FSS/3FNHF-Co
Crystal Mall 4, Room 403
Washington, DC 20406
Ph: 703-305-6016 Fax: 703-305-6290

CORPS OF ENGINEERS (COE)
U. S. Army Engineer Waterways Experiment Station
ATTN: Technical Report Distribution Section,
Services Branch, TIC
3909 Halls Ferry Road
Vicksburg, MS 39180-6199
Ph: 601-634-2485 Fax: 601-634-2506

ENVIRONMENTAL PROTECTION AGENCY (EPA)
Mail Code PM 215
401 M Street, S.W.
Washington, DC 20460
Ph: 202-260-7751 Fax: 202-260-2118
202-260-5797 (Document Control)
Order from:
Superintendent of Documents
Government Printing Office
Washington, DC 20402-9325
Ph: 202-783-3238 Fax: 202-275-7703

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)
One Batterymarch Park
P. O. Box 9146
Quincy, MA 02169
Ph: 1-800-344-3555 Fax: 617-984-7057
Ph: 617-770-3000

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

Not used.

-- End of Section --

SECTION 01300

SUBMITTALS

PART 1 GENERAL

1.1 DEFINITIONS

1.1.1 Submittal

Shop drawings, product data, samples, and administrative submittals presented for review and approval. Contract Clauses "Material and Workmanship," paragraph (b) and "Specifications and Drawings for Construction," paragraphs (d), (e), and (f) apply to all "submittals."

1.1.2 Types of Submittals

The following four groupings of submittals into which all submittal descriptions are classified, as designated in the paragraph entitled "Schedule of Submittal Descriptions."

a. Shop Drawings: As used in this Section, drawings, schedules, diagrams, and other data prepared specifically for this Contract, by the Contractor or through the Contractor by way of a subcontractor, manufacturer, supplier, distributor, or other lower tier contractor, to illustrate a portion of the work.

b. Product Data: Preprinted material such as illustrations, standard schedules, performance charts, instructions, brochures, diagrams, manufacturer's descriptive literature, catalog data, and other data to illustrate a portion of the work, but not prepared exclusively for this Contract.

c. Samples: Physical examples of products, materials, equipment, assemblies, or workmanship that are physically identical to a portion of the work, illustrating a portion of the work or establishing standards for evaluating the appearance of the finished work or both.

d. Administrative Submittals: Data presented for reviews and approval to ensure that the administrative requirements of the project are adequately met but not to ensure directly that the work is in accordance with the design concept and in compliance with the Contract documents.

1.1.3 Approving Authority

The person authorized to approve a submittal.

1.1.4 Work

As used in this Section, on- and off-site construction required by the Contract documents, including labor necessary to produce the construction and materials, products, equipment, and systems incorporated or to be incorporated in such construction.

1.2 SUBMITTALS

Submit the following in accordance with the requirements of this section.

1.2.1 SD-18, Records

a. Submittal register G

1.2.1.1 Submittal Register

State for each submittal the Contractor's planned submittal date. Submit within 30 days after award of the Contract. Insert dates on copies of the "Submittal Register." Obtain the original from the following source:

a. From the register with the submittal items filled in, attached.

1.3 PROCEDURES FOR SUBMITTALS

1.3.1 Reviewing, Certifying, Approving Authority

The QC organization shall be responsible for reviewing and certifying that submittals are in compliance with contract requirements. The approving authority on submittals is the QC Manager unless otherwise specified for the specific submittal. At each "Submittal" paragraph in the individual specification Sections, a notation "G," following a submittal item, indicates the Contracting Officer is the approving authority for that submittal item.

1.3.2 Constraints

a. Submittals listed or specified in this Contract shall conform to the provisions of this Section, unless explicitly stated otherwise.

b. Submittals shall be complete for each definable feature of work; components of the definable feature interrelated as a system shall be submitted at the same time.

c. When acceptability of a submittal is dependent on conditions, items, or materials included in separate subsequent submittals, the submittal will be returned without review.

d. Approval of a separate material, product, or component does not imply approval of assembly in which the item functions.

1.3.3 Scheduling

a. Coordinate scheduling, sequencing, preparing and processing of submittals with performance of the work so that work will not be delayed by submittal processing. Allow for potential requirements to resubmit.

b. Except as specified otherwise, allow a review period, beginning with receipt by the approving authority, that includes at least

15 working days for submittals for QC Manager approval and 20 working days for submittals for Contracting Officer approval. The period of review for submittals with Contracting Officer approval begins when the Government receives the submittal from the QC organization. The period of review for each resubmittal is the same as for the initial submittal.

c. For submittals requiring review by the Fire Protection Engineer, allow a review period, beginning when the Government receives the submittal from the QC organization, of 30 working days for return of the submittal to the Contractor. The period of review for each resubmittal is the same as for the initial submittal.

1.3.4 Variations

Variations from contract requirements require Government approval pursuant to Contract Clause entitled "Specifications and Drawings for Construction" and will be considered where advantageous to the Government. When proposing a variation, submit a written request to the Contracting Officer, with documentation of the nature and features of the variation and why the variation is desirable and beneficial to the Government. If lower cost is a benefit, also include an estimate of the cost saving. Identify the proposed variation separately and include the documentation for the proposed variation along with the required submittal for the item. When submitting a variation for approval, the Contractor warrants the following:

1.3.4.1 Variation Is Compatible

The Contract has been reviewed to establish that the variation, if incorporated, will be compatible with other elements of the work.

1.3.4.2 Contractor Is Responsible

The Contractor shall take actions and bear the additional costs, including review costs by the Government, necessary due to the proposed variation.

1.3.4.3 Review Schedule Is Modified

In addition to the normal submittal review period, a period of 15 working days will be allowed for consideration by the Government of submittals with variations.

1.3.5 Contractor's Responsibilities

a. Determine and verify field measurements, materials, field construction criteria; review each submittal; and check and coordinate each submittal with requirements of the work and Contract documents.

b. Transmit submittals to the QC organization in orderly sequence, in accordance with the Submittal Register, and to prevent delays in the work, delays to the Government, or delays to separate contractors.

c. Advise the Contracting Officer of variation, as required by the

paragraph entitled "Variations."

d. Correct and resubmit submittal as directed by the approving authority. Direct specific attention, in writing or on resubmitted submittal, to revisions not requested by the approving authority on previous submissions.

e. Furnish additional copies of submittals when requested by the Contracting Officer, to a limit of 20 submittals.

f. Complete work which must be accomplished as a basis of a submittal in time to allow the submittal to occur as scheduled.

g. Ensure no work has begun until submittals for that work have been returned as "approved," or "approved as noted" except to the extent that a portion of the work must be accomplished as a basis of the submittal.

1.3.6 QC Organization Responsibilities

a. Note the date on which the submittal was received from the contractor on each submittal for which the QC Manager is the approving authority.

b. Determine and verify field measurements, materials, field construction criteria; review each submittal; and check and coordinate each submittal with requirements of the work and Contract documents.

c. Review submittals for conformance with project design concepts and compliance with the Contract documents.

d. Act on submittals, determining the appropriate action based on the QC organization's review of the submittal.

(1) When the QC Manager is the approving authority, take the appropriate action on the submittal from the possible actions defined in the paragraph entitled, "Actions Possible."

(2) When the Contracting Officer is the approving authority or when a variation has been proposed, forward the submittal to the Government with the certifying statement or return the submittal marked "not reviewed" or "revise and resubmit" as appropriate. The QC organization's review of the submittal determines the appropriate action.

e. Ensure that material is clearly legible.

f. Stamp each sheet of each submittal with the QC certifying statement or approving statement, except that data submitted in bound volume or on one sheet printed on two sides may be stamped on the front of the first sheet only.

(1) When the approving authority is the Contracting Officer, the QC organization will certify submittals forwarded to the

Contracting Officer with the following certifying statement:

"I hereby certify that the (equipment) (material) (article) shown and marked in this submittal is that proposed to be incorporated with Contract Number N62472-93-C-0293, is in compliance with the Contract drawings and specification, can be installed in the allocated spaces, and is submitted for Government approval. Government approval of proposed variation, if any, is recommended.

Certified by Submittal Reviewer _____, Date _____
(Signature when applicable)

Certified by QC Manager _____, Date _____"
(Signature)

(2) When the approving authority is the QC Manager, the QC manager will use the following approval statement when returning submittals to the Contractor as "Approved" or "Approved as Noted."

"I hereby certify that the (material) (equipment) (article) shown and marked in this submittal and proposed to be incorporated with Contract Number N62472-93-C-0293, is in compliance with the contract drawings and specification, can be installed in the allocated spaces, and is _____ approved for use, _____ approved for use subject to Government approval of proposed variation.

Certified by Submittal Reviewer _____, Date _____
(Signature when applicable)

Approved by QC Manager _____, Date _____"
(Signature)

g. Sign the certifying statement or approval statement. The person signing the certifying statements shall be the QC organization member designated in the approved QC plan. The signatures shall be in original ink. Stamped signatures are not acceptable.

h. Update the submittal register as submittal actions occur and maintain the submittal register at the project site until final acceptance of all work by the Contracting Officer.

i. Retain a copy of approved submittals at the project site, including the Contractor's copy of approved samples.

j. When the approving authority is the QC Manager, forward two copies of each approved submittal, except "Samples," where one set is required, to the Contracting Officer.

1.3.7 Government's Responsibilities

When the approving authority is the Contracting Officer, the Government will:

a. Note the date on which the submittal was received from the QC

Manager, on each submittal for which the Contracting Officer is the approving authority.

b. Review submittals for approval within the scheduling period specified and only for conformance with project design concepts and compliance with the Contract documents.

c. Identify returned submittals with one of the actions defined in the paragraph entitled "Actions Possible" and with markings appropriate for the action indicated.

d. Retain three copies of each submittal, except "Samples," where one copy will be retained.

1.3.8 Actions Possible

Submittals will be returned with one of the following notations:

a. Submittals marked "not reviewed" will indicate the submittal has been previously reviewed and approved, is not required as a submittal, does not have evidence of being reviewed and approved by the Contractor, or is not complete. A submittal marked "not reviewed" will be returned with an explanation of the reason it is not reviewed. Returned submittals deemed to lack review by the Contractor or to be incomplete shall be resubmitted with appropriate action, coordination, or change.

b. Submittals marked "approved" "approved as submitted" authorize the Contractor to proceed with the work covered.

c. Submittals marked "approved as noted" authorize the Contractor to proceed with the work as noted provided the Contractor takes no exception to the notations.

d. Submittals marked "revise and resubmit" or "disapproved" indicate the submittal is incomplete or does not comply with the design concept or the requirements of the Contract documents and shall be resubmitted with appropriate changes.

1.4 FORMAT OF SUBMITTALS

1.4.1 Transmittal Form

Transmit each submittal, except sample installations and sample panels, to the office of the approving authority. Transmit submittals with a transmittal form prescribed by the Contracting Officer and standard for the project. The transmittal form shall identify the Contractor, indicate the date of the submittal, and include information prescribed by the transmittal form and required in the paragraph entitled "Identifying Submittals." Process transmittal forms to record actions regarding sample panels and sample installations.

1.4.2 Identifying Submittals

Identify submittals, except sample panel and sample installation, with the following information permanently adhered to or noted on each separate component of each submittal and noted on the transmittal form. Mark each copy of each submittal identically, with the following:

a. Project title and location.

b. Construction Contract number.

c. The Section number of the specification Section by which the submittal is required.

d. The submittal description (SD) number of each component of the submittal.

e. When a resubmission, an alphabetic suffix on the submittal description, for example, SD-10A, to indicate the resubmission.

f. The name, address, and telephone number of the subcontractor, supplier, manufacturer and any other second tier contractor associated with the submittal.

g. Product identification and location in project.

1.4.3 Format for Product Data

a. Present product data submittals for each Section as a complete, bound volume. Include a table of contents listing page and catalog item numbers for product data.

b. Indicate, by prominent notation, each product which is being submitted; indicate the specification Section number and paragraph number to which it pertains.

c. Supplement product data with material prepared for the project to satisfy submittal requirements for which product data does not exist. Identify this material as developed specifically for the project.

1.4.4 Format for Shop Drawings

a. Shop drawings shall not be less than 8 1/2 by 11 inches nor more than 30 x 42 inches.

b. Present 8 1/2 x 11-sized shop drawings as a part of the bound volume for the submittals required by the Section. Present larger drawings in sets.

c. Include on each drawing the drawing title, number, date, and revision numbers and dates, in addition to the information required in the paragraph entitled "Identifying Submittals."

d. Dimension drawings, except diagrams and schematic drawings; prepare

drawings demonstrating interface with other trades to scale. Identify materials and products for work shown.

1.4.5 Format of Samples

a. Furnish samples in the sizes below, unless otherwise specified or unless the manufacturer has prepackaged samples of approximately the same size as specified:

(1) Sample of Equipment or Device: Full size.

(2) Sample of Materials Less Than 2 by 3 inches: Built up to 8 1/2 by 11 inches.

(3) Sample of Materials Exceeding 8 1/2 by 11 inches: Cut down to 8 1/2 by 11 inches and adequate to indicate color, texture, and material variations.

(4) Sample of Linear Devices or Materials: 10-inch length or length to be supplied, if less than 10 inches. Examples of linear devices or materials are conduit and handrails.

(5) Sample of Non-Solid Materials: Pint. Examples of non-solid materials are sand and paint.

(6) Color Selection Samples: 2 inches by 4 inches.

(7) Sample Panel: 4 feet by 4 feet.

(8) Sample Installation: 100 square feet.

b. Samples Showing Range of Variation: Where variations are unavoidable due to the nature of the materials, submit sets of samples of not less than three units showing the extremes and middle of the range.

c. Reusable Samples: Incorporate returned samples into the work only if so specified or indicated. Incorporated samples shall be in undamaged condition at the time of use.

d. Recording of Sample Installation: Note and preserve the notation of the area constituting the sample installation but remove the notation at the final clean up of the project.

1.4.6 Format of Administrative Submittals

a. When the submittal includes a document which is to be used in the project or become a part of the project record, other than as a submittal, do not apply the Contractor's approval stamp to the document, but to a separate sheet accompanying the document.

1.5 QUANTITY OF SUBMITTALS

1.5.1 Number of Copies of Product Data

a. Submit six copies of submittals of product data requiring review and approval only by the QC organization and seven copies of product data requiring review and approval by the Contracting Officer.

1.5.2 Number of Copies of Shop Drawings

a. For shop drawings presented on sheets larger than 8 1/2-inches by 14 inches, submit one reproducible and three prints of each shop drawing prepared for this project.

(1) Transmit reproducibles rolled in mailing tubes.

(2) After review, the approving authority will retain the prints and return only the reproducible with notation resulting from the review.

b. For shop drawings presented on sheets 8 1/2-inches by 14 inches or less, conform to the quantity requirements for product data.

1.5.3 Number of Samples

a. Submit two samples, or two sets of samples showing range of variation, of each required item. One approved sample or set of samples will be retained by the approving authority and one will be returned to the Contractor.

b. Submit one sample panel. Include components listed in technical section or as directed.

c. Submit one sample installation, where directed.

d. Submit one sample of non-solid materials.

1.5.4 Number of Copies of Administrative Submittals

a. Unless otherwise specified, submit administrative submittals which are 8 1/2 inches by 14 inches or smaller in size in the quantity required for product data.

b. Unless otherwise specified, submit administrative submittals larger than 8 1/2 inches by 14 inches in size in the quantities required for shop drawings.

1.6 SCHEDULE OF SUBMITTAL DESCRIPTIONS (SD)

SD-04, Drawings

Submittals which graphically show relationship of various components of the work, schematic diagrams of systems, detail of fabrications, layout of particular elements, connections, and other relational aspects of the work.

A type of shop drawing.

SD-05, Design Data

Design calculations, mix designs, analyses, or other data, written in nature and pertaining to a part of the work. A type of shop drawing.

SD-08, Statements

A document, required of the Contractor, or through the Contractor by way of a supplier, installer, manufacturer, or other lower tier contractor, the purpose of which is to further the quality or orderly progression of a portion of the work by documenting procedures, acceptability of methods or personnel, qualifications, or other verification of quality. A type of shop drawing.

SD-09, Reports

Reports of inspection and laboratory test, including analysis and interpretation of test results. Each report shall be properly identified. Test methods used and compliance with recognized test standards shall be described.

SD-12, Field Test Reports

A written report which includes the findings of a test made at the job site, in the vicinity of the job site, or on a sample taken from the job site, on a portion of the work, during or after installation. The report must be signed by an authorized official of a testing laboratory or agency and must state the test was performed in accordance with the test requirements; state the test results; and indicate whether the material, product, or system has passed or failed the test. A type of shop drawing.

SD-18, Records

Documentation to ensure compliance with an administrative requirement or to establish an administrative mechanism. A type of administrative submittal.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

Not used.

-- End of Section --

SUBMITTAL REGISTER
INSTRUCTIONS

1. Use submittal register form for the project's Submittal Register and to track progress of submittals as they are processed. Users may arrange Parts "A" and "B" side-by-side in a 3-ring notebook.

2. The Government will supply submittal register forms, with columns (a) through (e) completed to the extent that will be required by the Government. Consider these forms as being for convenience only. Correct variations from requirements shown in specification sections; ensure Submittal Register conforms to specification sections.

a. Column (a): Lists each specification section in which a submittal is required.

b. Column (b): Lists each submittal description (SD No. and type, e.g. SD-04, Drawings) required in each specification section. Follow each submittal description with the list of material or products to be addressed in each submittal description.

c. Column (c): Lists one principal paragraph in specification section where a material or product is specified. This listing is only to facilitate submittal reviews. Do not consider entries in column (c) as limiting project requirements; do not consider that a blank must be filled in by Contractor or the Government.

d. Column (d): Indicates approving authority for each submittal. A "G" indicates approval by Contracting Officer; a blank indicates approval by QC Manager.

e. Column (e): Indicates, for submittals to be approved by Contracting Officer, specific reviewers other than QC organization. This column may or may not be filled out on the copy supplied by the Government.

3. Column (f) through column (i) will be used by Contractor, QC organization and the Government on their own copies to record data established by the Contractor.

a. Column (f): As submittals are processed, list a consecutive number assigned by Contractor for each group of submittals. Place this same number in the appropriate block of "Submittal Transmittal Form". For a resubmission, repeat transmittal control number of the original submittal with a suffix; e.g. No. "100B" is second resubmission of material originally transmitted under No. "100."

b. Column (g): List dates scheduled for approving authority to receive submittals. These dates are the scheduled beginnings of submittal review period. The Contractor proposes these dates and the Contracting Officer approves them to establish the approved Submittal Register.

c. Columns (h) and (i): Use to record Contractor's review when

forwarding submittals to the QC organization.

4. Column (j) through column (o) will be used by Contractor, QC organization, and the Government on their own copies, in the following manner:

Contractor

a. Column (j): Enter date submittal is delivered to QC organization if QC Manager is approving authority or to the Government via QC organization if Contracting Officer is approving authority.

b. Columns (k) and (l): No entries are required on Contractor's copy.

c. Columns (m) and (n): Enter action and date of action by approving authority as shown on returned submittal.

d. Column (o): Enter date Contractor receives an acted-on submittal.

QC organization

a. Column (j): Enter date QC organization receives submittal from Contractor.

b. Columns (k) and (l): If approving authority is Contracting Officer, enter date QC organization forwards certified submittal to Contracting Officer.

c. Columns (m) and (n): If approving authority is Contracting Officer, enter the Government action and date of action as shown on returned submittal. If approving authority is QC Manager, enter QC action and date of action.

d. Column (o): Enter date QC organization returns submittal to Contractor, regardless of who is approving authority. If QC Manager is approving authority, it is also the date the information copy is forwarded to the Government.

Government

a. Column (j): When Contracting Officer is approving authority, enter date submittal is received from QC organization.

b. Columns (k) and (l): When Contracting Officer is approving authority, enter date submittal is routed or received from specialized reviewer, such as fire protection engineer, architect-engineer, etc.

c. Columns (m) and (n): When approving authority is Contracting Officer, enter the Government action and date of action. When approving authority is QC organization, enter QC Manager action and date of action, as indicated on information copy forwarded by QC organization.

d. Column (o): When Contracting Officer is approving authority, enter

date submittal is returned to Contractor via QC organization.

SUBMITTAL REGISTER (PART A)

Contract Number: N62472-93-C-0293 | Project Title: REMOVAL ACTION FOR MELVILLE NORTH LANDFILL

	SD NO, AND TYPE OF SUBMITTAL					
SPEC SECTION NO.	MATERIAL OR PRODUCT	SPEC PARA NO.	CLASSIF/ APPR BY CO *	GOVT OR A/E REVIEWER	TRANS CONTROL NO.	PLANNED SUBMITTAL DATE
(a)	(b)	(c)	(d)	(e)	(f)	(g)
1) 01010	SD-18, Records	1.2.1				
2)	Report of subcontracts	1.2.1.1	G	ROICC		
3)	Work performed by Contractor	3.3.2	G	ROICC		
4)	required insurance	1.9.2	G	ROICC		
5)	Schedule of prices	1.11	G	ROICC		
6)	As-built drawings	1.15.1	G	ROICC		
7)						
01011	SD-18, Records	1.3.1				
9)	Construction schedule	1.3.1.1	G	ROICC		
10)	Equipment delivery schedule	1.3.1.2	G	ROICC		
11)	Monthly update	1.3.1.4	G	ROICC		
12)	Accident Prevention Plan	3.3.4	G	ROICC		
13) 01300	SD-18, Records	1.2.1				
14)	Submittal register	1.2.1.1	G	ROICC		
15) 01400	SD-18, Records	1.2.1				
16)	QC plan	1.6	G	ROICC		
17) 01560	SD-18, Records	1.4.1				
18)	Solid waste disposal permit	1.4.1.1	G	ROICC		
19) 02102	SD-04, Drawings	1.2.1				
20)	Clearing and Grubbing Plan	1.2.1	G	A/E		

* Navy Notes:
Approved by:
G: Contracting Officer
Blank: CQC Manager

* NASA Notes:
Approved by:
Blank: Contracting Officer

* Army Notes:
Classification:
GA: Gov't Approval
FIO: For Information Only

SUBMITTAL REGISTER (PART A)

Contract Number: N62472-93-C-0293 | Project Title: REMOVAL ACTION FOR MELVILLE NORTH LANDFILL

SPEC SECTION NO.	SD NO, AND TYPE OF SUBMITTAL MATERIAL OR PRODUCT	SPEC PARA NO.	CLASSIF/ APPR BY CO *	GOVT OR A/E REVIEWER	TRANS CONTROL NO.	PLANNED SUBMITTAL DATE
(a)	(b)	(c)	(d)	(e)	(f)	(g)
1) 02220	SD-04, Drawings	1.3.1				
2)	drawings	1.3.1.1	G	A/E		
3) 02220	SD-05, Design Data	1.3.2				
4)	calculations	1.3.2.1	G	A/E		
5) 02220	SD-08, Statements	1.3.3				
6)	Supporting systems	3.2.1	G	A/E		
7) 02220	SD-12, Field Test Reports	1.3.4				
	Fill and backfill	3.8.2.1	G	A/E		
9) 02990	SD-08, Statements	1.7.1				
10)	Testing of sidewall sampling	1.7.1.1	G	A/E		
11)	and analysis plan					
12)	Qualifications	1.7.1.2	G	A/E		
13)	Spill and discharge control plan	1.7.1.3	G	A/E		
14)	Spill and discharge control plan	3.2	G	A/E		
15)	Off-site disposal plan		G	A/E		
16)	Dewatering Plan	1.7.1.5	G	A E		
17) 02990	SD-09, Reports	1.7.2				
18)	Laboratory testing reports	3.7				
19) 02990	SD-18, Records	1.7.3				
20)	Results of excavation	3.7	G	A/E		

* Navy Notes:
Approved by:
G: Contracting Officer
Blank: CQC Manager

* NASA Notes:
Approved by:
Blank: Contracting Officer

* Army Notes:
Classification:
GA: Gov't Approval
FIO: For Information Only

SUBMITTAL REGISTER (PART A)

Contract Number: N62472-93-C-0293 | Project Title: REMOVAL ACTION FOR MELVILLE NORTH LANDFILL

SPEC SECTION NO.	SD NO, AND TYPE OF SUBMITTAL MATERIAL OR PRODUCT	SPEC PARA NO.	CLASSIF/ APPR BY CO *	GOVT OR A/E REVIEWER	TRANS CONTROL NO.	PLANNED SUBMITTAL DATE
(a)	(b)	(c)	(d)	(e)	(f)	(g)
1)	Contaminated soil disposal	3.7	G	A/E		
2)	paperwork					
3)	Contaminated water disposal	3.6	G	A/E		
4)	paperwork					
5) 02995	SD-08, Statements	1.3.1				
6)	Site Safety and Health Safety	1.3.1.1	G	A/E		
7)	Plan.					
	Qualifications	1.3.1.2	G	A/E		

* Navy Notes:
Approved by:
G: Contracting Officer
Blank: CQC Manager

* NASA Notes:
Approved by:
Blank: Contracting Officer

* Army Notes:
Classification:
GA: Gov't Approval
FIO: For Information Only

PART B) SUBMITTAL REGISTER

Page ____ of ____

ocation: | Contractor:

CONTRACTOR ACTION			APPROVING AUTHORITY ACTION				CONTR	
CT. ODE	DATE OF ACTION	DATE FWD TO APPR AUTH / DATE RECD FROM CONTR	DATE FWD TO OTHER REVIEWER	DATE RECD FROM OTH REVIEWER	ACT. CODE	DATE OF ACTION	MAILED TO CONTR / RECD FROM APPR AUTH	REMARKS
h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)
								1)
								2)
								3)
								4)
								5)
								6)
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								13)
								14)
								15)
								16)
								17)
								18)
								19)
								20)

ACTION CODES: NR: Not Reviewed AN: Approved as Noted
A: Approved RR: Disapproved; Revise and Resubmit
(Others may be prescribed by the Transmittal Form)

SECTION 01400

QUALITY CONTROL

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only.

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM D 3740	1988 Evaluation of Agencies Engaged in the Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction
ASTM E 543	1989 (Rev. A) Determining the Qualification of Nondestructive Testing Agencies

1.2 SUBMITTALS

Submit the following in accordance with Section 01300, "Submittals."

1.2.1 SD-18, Records

a. QC plan G

b. Proof of EPA/STATE laboratory certification for environment samples. G

Submit a QC plan within 30 calendar days after award of the Contract.

1.3 INFORMATION FOR THE CONTRACTING OFFICER

Deliver the following to the Contracting Officer:

a. Combined Contractor Production Report/Contractor Quality Control Report (1 sheet): Original and 1 copy by 10:00 AM the next working day after each day that work is performed;

b. Testing Plan and Log, 1 copy, at the end of each month;

c. Monthly Summary Report of Field Tests: Original and 1 copy attached to Contractor Quality Control Report at the end of each month;

d. QC Meeting Minutes: 1 copy, within 2 calendar days of the meeting;

e. Rework Items List: 1 copy, by the last working day of the month and;

f. QC Certifications: As required by the paragraph entitled "QC Certifications".

1.4 QC PROGRAM REQUIREMENTS

Establish and maintain a QC program as described in this section. The QC program consists of a QC Organization, a QC Plan, a QC Plan meeting, a Coordination and Mutual Understanding Meeting, QC meetings, three phases of control, submittal review and approval except those designated for Contracting Officer approval, testing , and QC certifications and documentation necessary to provide materials, equipment, workmanship, fabrication, construction and operations which comply with the requirements of this Contract. The QC program shall cover construction operations on-site and off-site and shall be keyed to the proposed construction sequence.

1.5 QC ORGANIZATION

1.5.1 QC Manager

1.5.1.1 Duties

Provide a QC Manager at the work site to manage and implement the QC program. The only duties and responsibility the QC Manager shall have on this Contract is managing and implementing the QC program. The QC Manager is required to attend the QC Plan meeting, attend the Coordination and Mutual Understanding Meeting, conduct the QC meetings, perform the three phases of control, perform submittal review and approval except those designated for Contracting Officer approval, ensure testing is performed and prepare QC certifications and documentation required in this Contract. No work or testing may be performed unless the QC Manager is on the work site. The QC Manager shall report directly to an officer of the firm and shall not be the same individual as, nor be subordinate to, the project superintendent or the project manager.

1.5.1.2 Qualifications

An individual with a minimum of 5 years experience as a foreman, superintendent, inspector, QC Manager, project manager, or construction manager on similar size and type construction contracts which included the major trades that are part of this Contract.

1.5.2 Alternate QC Manager Duties and Qualifications

Designate an alternate for the QC Manager at the work site to serve in the event of the designated QC Manager's absence. The period of absence may not exceed two weeks at one time, and not more than 30 workdays during a calendar year. The qualification requirements for the Alternate QC Manager shall be the same as for the QC manager.

1.6 QC PLAN

1.6.1 Requirements

Provide for approval by the Contracting Officer, a QC plan that covers, both on-site and off-site work and includes, the following:

a. A chart showing the QC organizational structure and its relationship to the production side of the organization.

b. Names and qualifications, in resume format, for each person in the QC organization.

c. Duties, responsibilities and authorities of each person in the QC organization.

d. A listing of outside organizations such as, architectural and consulting engineering firms that will be employed by the Contractor and a description of the services these firms will provide.

e. A letter signed by an officer of the firm appointing the QC Manager and stating that he/she is responsible for managing and implementing the QC program as described in this contract. Include in this letter the QC Manager's authority to direct the removal and replacement of non-conforming work.

f. Procedures for reviewing, approving and managing submittals. Provide the names of the persons in the QC organization authorized to review and certify submittals prior to approval.

g. Testing laboratory information required by the paragraphs entitled "Accredited Laboratories" or "Testing Laboratory Requirements", as applicable.

h. A Testing Plan and Log that includes the tests required, referenced by the specification paragraph number requiring the test, the frequency, and the person responsible for each test.

i. Procedures to identify, record, track and complete rework items.

j. Documentation procedures, including proposed report formats.

k. A list of the definable features of work. A definable feature of work is a task which is separate and distinct from other tasks and requires separate control requirements. As a minimum, if approved by the Contracting Officer, consider each section of the specifications as a definable feature of work. However, at times, there may be more than one definable feature of work in each section of the specifications.

1.6.2 Preliminary Work Authorized Prior to Approval

The only work that is authorized to proceed prior to the approval of the QC plan is mobilization of storage and office trailers and surveying.

1.6.3 Approval

Approval of the QC plan is required prior to the start of construction. The Contracting Officer reserves the right to require changes in the QC plan and operations as necessary to ensure the specified quality of work. The Contracting Officer reserves the right to interview any member of the QC organization at any time in order to verify his/her submitted qualifications.

1.6.4 Notification of Changes

Notify the Contracting Officer, in writing, of any proposed change, including changes in the QC organization personnel, a minimum of seven calendar days prior to a proposed change. Proposed changes must be approved by the Contracting Officer.

1.7 QC PLAN MEETING

Prior to submission of the QC plan, meet with the Contracting Officer to discuss the QC plan requirements of this Contract. The purpose of this meeting is to develop a mutual understanding of the QC plan requirements prior to plan development and submission.

1.8 COORDINATION AND MUTUAL UNDERSTANDING MEETING

After submission of the QC Plan, but prior to the start of construction, meet with the Contracting Officer to discuss the QC program required by this Contract. The purpose of this meeting is to develop a mutual understanding of the QC details, including forms to be used for documentation, administration for on-site and off-site work, and the coordination of the Contractor's management, production and QC personnel with the Contracting Officer. As a minimum, the Contractor's personnel required to attend shall include the project manager, project superintendent, and QC Manager. Minutes of the meeting shall be prepared by the QC Manager and signed by both the Contractor and the Contracting Officer.

1.9 QC MEETINGS

After the start of construction, the QC Manager shall conduct QC meetings once every two weeks at the work site with the project superintendent. The QC Manager shall prepare the minutes of the meeting and provide a copy to the Contracting Officer within 2 working days after the meeting. The Contracting Officer may attend these meetings. The QC Manager shall notify the Contracting Officer at least 48 hours in advance of each meeting. As a minimum, the following shall be accomplished at each meeting:

a. Review the minutes of the previous meeting;

b. Review the schedule and the status of work:

- Work or testing accomplished since last meeting
- Rework items identified since last meeting
- Rework items completed since last meeting;

c. Review the status of submittals:

- Submittals reviewed and approved since last meeting
- Submittals required in the near future;

d. Review the work to be accomplished in the next 2 weeks and documentation required. Schedule the three phases of control and testing:

- Establish completion dates for rework items
- Preparatory phases required
- Initial phases required
- Follow-up phases required
- Testing required
- Status of off-site work or testing
- Documentation required;

e. Resolve QC and production problems; and

f. Address items that may require revising the QC plan:

- Changes in QC organization personnel
- Changes in procedures.

1.10 THREE PHASES OF CONTROL

The QC Manager shall perform the three phases of control to ensure that work complies with Contract requirements. The Three Phases of Control shall adequately cover both on-site and off-site work and shall include the following for each definable features of work: A definable feature of work is a task which is separate and distinct from other tasks and requires separate control requirements.

1.10.1 Preparatory Phase

Notify the Contracting Officer at least 2 work days in advance of each preparatory phase. Conduct the preparatory phase with the QC specialists, the superintendent, and the foreman responsible for the definable feature. Document the results of the preparatory phase actions in the daily Contractor Quality Control Report. Perform the following prior to beginning work on each definable feature of work:

a. Review each paragraph of the applicable specification sections;

b. Review the Contract drawings;

c. Verify that appropriate shop drawings and submittals for materials and equipment have been submitted and approved. Verify receipt of approved factory test results, when required;

d. Review the testing plan and ensure that provisions have been made to provide the required QC testing;

e. Examine the work area to ensure that the required preliminary work

has been completed;

f. Examine the required materials, equipment and sample work to ensure that they are on hand and conform to the approved shop drawings and submitted data;

g. Review the safety plan and appropriate activity hazard analysis to ensure that applicable safety requirements are met, and that required Material Safety Data Sheets (MSDS) are submitted; and

h. Discuss construction methods;

1.10.2 Initial Phase

Notify the Contracting Officer at least 2 work days in advance of each initial phase. When construction crews are ready to start work on a definable feature of work, conduct the initial phase with the QC Specialists, the superintendent, and the foreman responsible for that definable feature of work. Observe the initial segment of the definable feature of work to ensure that the work complies with Contract requirements. Document the results of the initial phase in the daily Contractor Quality Control Report. Repeat the initial phase for each new crew to work on-site, or when acceptable levels of specified quality are not being met. Perform the following for each definable feature of work:

a. Establish the quality of workmanship required;

b. Resolve conflicts;

c. Review the Safety Plan and the appropriate activity hazard analysis to ensure that applicable safety requirements are met; and

d. Ensure that testing is performed by the approved laboratory.

1.10.3 Follow-Up Phase

Perform the following for on-going work daily, or more frequently as necessary until the completion of each definable feature of work and document in the daily Contractor Quality Control Report:

a. Ensure the work is in compliance with Contract requirements;

b. Maintain the quality of workmanship required;

c. Ensure that testing is performed by the approved laboratory; and

d. Ensure that rework items are being corrected.

1.10.4 Notification of Three Phases of Control for Off-Site Work

Notify the Contracting Officer at least two weeks prior to the start of the preparatory and initial phases.

1.11 SUBMITTAL REVIEW AND APPROVAL

Procedures for submission, review and approval of submittals are described in Section 01300, "Submittals."

1.12 TESTING

Except as stated otherwise in the specification sections, perform sampling and testing required under this Contract.

1.12.1 Testing Laboratory Requirements

Provide an independent testing laboratory qualified to perform sampling and tests required by this Contract. When the proposed testing laboratory is not accredited by an acceptable accreditation program as described by the paragraph entitled "Accredited Laboratories", submit to the Contracting Officer for approval, certified statements signed by an official of the testing laboratory attesting that the proposed laboratory meets or conforms to the following requirements:

a. Sampling and testing shall be under the technical direction of a Registered Professional Engineer (P.E) with at least 5 years of experience in construction material testing.

b. Laboratories engaged in testing of soil and rock, as used in engineering design and construction, shall meet the requirements of ASTM D 3740.

c. Laboratories engaged in nondestructive testing (NDT) shall meet the requirements of ASTM E 543.

d. Proof of EPA/STATE certified.

1.12.2 Accredited Laboratories

Acceptable accreditation programs are the National Institute of Standards and Technology (NIST) National Voluntary Laboratory Accreditation Program (NVLAP), the American Association of State Highway and Transportation Officials (AASHTO) program and the American Association for Laboratory Accreditation (A2LA) program. Furnish to the Contracting Officer, a copy of the Certificate of Accreditation, Scope of Accreditation and latest directory of the accrediting organization for accredited laboratories. The scope of the laboratory's accreditation shall include the test methods required by the Contract. Accredited laboratories must specify certified laboratories qualified to perform environmental testing.

1.12.3 Inspection of Testing Laboratories

Prior to approval of non-accredited laboratories, the proposed testing laboratory facilities and records may be subject to inspection by the Contracting Officer. Records subject to inspection include equipment inventory, equipment calibration dates and procedures, library of test procedures, audit and inspection reports by agencies conducting laboratory evaluations and certifications, testing and management personnel qualifications, test report forms, and the internal QC procedures.

1.12.4 Capability Check

The Contracting Officer retains the right to check laboratory equipment in the proposed laboratory and the laboratory technician's testing procedures, techniques, and other items pertinent to testing, for compliance with the standards set forth in this Contract.

1.12.5 Test Results

Cite applicable Contract requirements, tests or analytical procedures used. Provide actual results and include a statement that the item tested or analyzed conforms or fails to conform to specified requirements. Conspicuously stamp the cover sheet for each report in large red letters "CONFORMS" or "DOES NOT CONFORM" to the specification requirements, whichever is applicable. Test results shall be signed by a testing laboratory representative authorized to sign certified test reports. Furnish the signed reports, certifications, and other documentation to the Contracting Officer via the QC Manager. Furnish a summary report of field tests at the end of each month. Attach a copy of the summary report to the last daily Contractor Quality Control Report of each month.

1.13 QC CERTIFICATIONS

1.13.1 Contractor Quality Control Report Certification

Each Contractor Quality Control Report shall contain the following statement: "On behalf of the Contractor, I certify that this report is complete and correct and equipment and material used and work performed during this reporting period is in compliance with the contract drawings and specifications to the best of my knowledge, except as noted in this report".

1.13.2 Invoice Certification

Furnish a certificate to the Contracting Officer with each payment request, signed by the QC Manager, attesting that as-built drawings are current and attesting that the work for which payment is requested, including stored material, is in compliance with contract requirements.

1.13.3 Completion Certification

Upon completion of work under this Contract, the QC Manager shall furnish a certificate to the Contracting Officer attesting that "the work has been completed, inspected, tested and is in compliance with the Contract".

1.14 DOCUMENTATION

Maintain current and complete records of on-site and off-site QC program operations and activities.

1.14.1 Contractor Production Report

Reports are required for each day that work is performed and shall be attached to the Contractor Quality Control Report prepared for the same

day. Account for each calendar day throughout the life of the Contract. The reporting of work shall be identified by terminology consistent with the construction schedule. Contractor Production Reports are to be prepared, signed and dated by the project superintendent and shall contain the following information:

a. Date of report, report number, name of contractor, Contract number, title and location of Contract and superintendent present.

b. Weather conditions in the morning and in the afternoon including maximum and minimum temperatures.

c. A list of Contractor and subcontractor personnel on the work site, their trades, employer, work location, description of work performed and hours worked.

d. A list of job safety actions taken and safety inspections conducted. Indicate that safety requirements have been met including the results on the following:
   - Was a job safety meeting held? (If YES attach a copy of the meeting minutes)
   - Were there any lost time accidents? (If YES attach a copy of the completed OSHA report)
   - Was trenching/scaffold/high voltage electrical/high work done? (If YES attach a statement or checklist showing inspection performed)
   - Was hazardous material/waste released into the environment? meetings held and accidents that happened.

e. A list of equipment/material received each day that is incorporated into the job.

f. A list of construction and plant equipment on the work site including the number of hours used, idle and down for repair.

g. Include a "remarks" section in this report which will contain pertinent information including directions received, problems encountered during construction, work progress and delays, conflicts or errors in the drawings or specifications, field changes, safety hazards encountered, instructions given and corrective actions taken, delays encountered and a record of visitors to the work site.

1.14.2 Contractor Quality Control Report

Reports are required for each day that work is performed and for every seven consecutive calendar days of no-work and on the last day of a no-work period. Account for each calendar day throughout the life of the Contract. The reporting of work shall be identified by terminology consistent with the construction schedule. Contractor Quality Control Reports are to be prepared, signed and dated by the QC Manager and shall contain the following information:

a. Identify the control phase and the definable feature of work.

b. Results of the Preparatory Phase meetings held including the location of the definable feature of work and a list of personnel present at the meeting. Indicate in the report that for this definable feature of work, the drawings and specifications have been reviewed, submittals have been approved, materials comply with approved submittals, materials are stored properly, preliminary work was done correctly, the testing plan has been reviewed, and work methods and schedule have been discussed.

c. Results of the Initial Phase meetings held including the location of the definable feature of work and a list of personnel present at the meeting. Indicate in the report that for this definable feature of work the preliminary work was done correctly, samples have been prepared and approved, the workmanship is satisfactory, test results are acceptable, work is in compliance with the Contract, and the required testing has been performed and include a list of who performed the tests.

d. Results of the Follow-up Phase inspections held including the location of the definable feature of work. Indicate in the report for this definable feature of work that the work complies with the Contract as approved in the Initial Phase, and that required testing has been performed and include a list of who performed the tests.

e. Results of the three phases of control for off-site work, if applicable, including actions taken.

f. List the rework items identified, but not corrected by close of business.

g. List the rework items corrected from the rework items list along with the corrective action taken.

h. Include a "remarks" section in this report which will contain pertinent information including directions received, quality control problem areas, deviations from the QC plan, construction deficiencies encountered, QC meetings held, acknowledgement that as-built drawings have been updated, corrective direction given by the QC Organization and corrective action taken by the Contractor.

i. Contractor Quality Control Report certification.

1.14.3 Testing Plan and Log

As tests are performed, the QC Manager shall record on the "Testing Plan and Log" the date the test was conducted, the date the test results were forwarded to the Contracting Officer, remarks and acknowledgement that an accredited or Contracting Officer approved testing laboratory was used. Attach a copy of the updated "Testing Plan and Log" to the last daily Contractor Quality Control Report of each month.

1.14.4 Rework Items List

The QC Manager shall maintain a list of work that does not comply with the Contract, identifying what items need to be reworked, the date the item was originally discovered, and the date the item was corrected. There is no requirement to report a rework item that is corrected the same day it is discovered. Attach a copy of the "Contractor Rework Items List" to the last daily Contractor Quality Control Report of each month. The Contractor shall be responsible for including on this list items needing rework including those identified by the Contracting Officer.

1.14.5 As-Built Drawings

The QC Manager is required to review the as-built drawings required by Section 01010, "General Paragraphs", to ensure that as-built drawings are kept current on a daily basis and marked to show deviations which have been made from the Contract drawings. The QC Manager or QC Specialist assigned to an area of responsibility shall initial each deviation and each revision. Upon completion of work, the QC Manager shall furnish a certificate attesting to the accuracy of the as-built drawings prior to submission to the Contracting Officer.

1.14.6 Report Forms

The following forms, which are attached at the end of this section, are acceptable for providing the information required by the paragraph entitled "Documentation". While use of these specific formats are not required, any other format used shall contain the same information:

a. Combined Contractor Production Report and Contractor Quality Control Report (1 sheet), with separate continuation sheet

b. Testing Plan and Log

c. Rework Items List

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

Not used.

-- End of Section --

CONTRACTOR PRODUCTION REPORT

(ATTACH ADDITIONAL SHEETS IF NECESSARY)

DATE

CONTRACT NO.	TITLE AND LOCATION	REPORT NO.
CONTRACTOR	SUPERINTENDENT	
AM WEATHER / PM WEATHER	MAX TEMP: °F	MIN TEMP: °F

WORK PERFORMED TODAY

WORK LOCATION AND DESCRIPTION	EMPLOYER	NUMBER	TRADE	HRS

JOB SAFETY

WAS A JOB SAFETY MEETING HELD THIS DATE? ☐ YES ☐ NO
(If YES attach copy of the meeting minutes)

WERE THERE ANY LOST TIME ACCIDENTS THIS DATE? ☐ YES ☐ NO
(If YES attach copy of completed OSHA report)

WAS TRENCHING/SCAFFOLD/HV ELECTRICAL/HIGH WORK DONE? ☐ YES ☐ NO
(If YES attach statement or checklist showing inspection performed)

WAS HAZARDOUS MATERIAL/WASTE RELEASED INTO THE ENVIRONMENT? ☐ YES ☐ NO
(If YES attach description of incident and proposed action)

TOTAL WORK HOURS ON JOB SITE THIS DATE	
CUMULATIVE TOTAL OF WORK HOURS FROM PREVIOUS REPORT	
TOTAL WORK HOURS FROM START OF CONSTRUCTION	

LIST SAFETY ACTIONS TAKEN TODAY/SAFETY INSPECTIONS CONDUCTED

☐ SAFETY REQUIREMENTS HAVE BEEN MET.

EQUIPMENT/MATERIAL RECEIVED TODAY TO BE INCORPORATED IN JOB

CONSTRUCTION AND PLANT EQUIPMENT ON JOB SITE TODAY. INCLUDE NUMBER OF HOURS USED TODAY

REMARKS

CONTRACTOR/SUPERINTENDENT _____ DATE _____

CONTRACTOR QUALITY CONTROL REPORT

(ATTACH ADDITIONAL SHEETS IF NECESSARY)

DATE

PHASE	Y - YES; N - NO, SEE REMARKS; BLANK - NOT APPLICABLE	
PREPARATORY	THE PLANS AND SPECS HAVE BEEN REVIEWED.	
	THE SUBMITTALS HAVE BEEN APPROVED.	
	MATERIALS COMPLY WITH APPROVED SUBMITTALS.	
	MATERIALS ARE STORED PROPERLY.	
	PRELIMINARY WORK WAS DONE CORRECTLY.	
	TESTING PLAN HAS BEEN REVIEWED.	
	WORK METHOD AND SCHEDULE DISCUSSED.	

IDENTIFY DEFINABLE FEATURE OF WORK, LOCATION AND *LIST PERSONNEL PRESENT*

INITIAL		
	PRELIMINARY WORK WAS DONE CORRECTLY.	
	SAMPLE HAS BEEN PREPARED/APPROVED.	
	WORKMANSHIP IS SATISFACTORY.	
	TEST RESULTS ARE ACCEPTABLE.	
	WORK IS IN COMPLIANCE WITH THE CONTRACT.	

TESTING PERFORMED & WHO PERFORMED TEST

FOLLOW-UP		
	WORK COMPLIES WITH CONTRACT AS APPROVED IN INITIAL PHASE.	

TESTING PERFORMED & WHO PERFORMED TEST

REWORK ITEMS IDENTIFIED TODAY (NOT CORRECTED BY CLOSE OF BUSINESS)

REWORK ITEMS CORRECTED TODAY (FROM REWORK ITEMS LIST)

REMARKS

On behalf of the contractor, I certify that this report is complete and correct and equipment and material used and work performed during this reporting period is in compliance with the contract drawings and specifications to the best of my knowledge except as noted in this report.

AUTHORIZED QC MANAGER AT SITE _____ DATE _____

GOVERNMENT QUALITY ASSURANCE REPORT

DATE

QUALITY ASSURANCE REPRESENTATIVE'S REMARKS AND/OR EXCEPTIONS TO THE REPORT

GOVERNMENT QUALITY CONTROL MANAGER _____ DATE _____

CONTRACTOR QUALITY CONTROL REPORT CONTINUATION SHEET

(ATTACH ADDITIONAL SHEETS IF NECESSARY)

DATE

CONTRACT NO.

REPORT NO.

PHASE	Y - YES; N - NO, SEE REMARKS; BLANK - NOT APPLICABLE		IDENTIFY DEFINABLE FEATURE OF WORK, LOCATION AND *LIST PERSONNEL PRESENT*
PREPARATORY	THE PLANS AND SPECS HAVE BEEN REVIEWED.		
	THE SUBMITTALS HAVE BEEN APPROVED.		
	MATERIALS COMPLY WITH APPROVED SUBMITTALS.		
	MATERIALS ARE STORED PROPERLY.		
	PRELIMINARY WORK WAS DONE CORRECTLY.		
	TESTING PLAN HAS BEEN REVIEWED.		
	WORK METHOD AND SCHEDULE DISCUSSED.		

PHASE	Y - YES; N - NO, SEE REMARKS; BLANK - NOT APPLICABLE		IDENTIFY DEFINABLE FEATURE OF WORK, LOCATION AND *LIST PERSONNEL PRESENT*	TESTING PERFORMED & WHO PERFORMED TEST
INITIAL	PRELIMINARY WORK WAS DONE CORRECTLY.			
	SAMPLE HAS BEEN PREPARED/APPROVED.			
	WORKMANSHIP IS SATISFACTORY.			
	TEST RESULTS ARE ACCEPTABLE.			
	WORK IS IN COMPLIANCE WITH THE CONTRACT.			

TRACTOR QUALITY CONTROL REPORT CONTINUATION SHEET

(ATTACH ADDITIONAL SHEETS IF NECESSARY)

DATE

CONTRACT NO.

REPORT NO.

PHASE	Y - YES; N - NO, SEE REMARKS; BLANK - NOT APPLICABLE	IDENTIFY DEFINABLE FEATURE OF WORK, LOCATION AND *LIST PERSONNEL PRESENT*	TESTING PERFORMED & WHO PERFORMED TEST
FOLLOW-UP	WORK COMPLIES WITH CONTRACT AS APPROVED IN INITIAL PHASE.		

REWORK ITEMS LIST

Contract No. and Title: _____

Contractor: _____

NUMBER	DATE IDENTIFIED	DESCRIPTION	CONTRACT REQUIREMENT (Spec. Section and Par. No., Drawing No. and Detail No., etc.)	ACTION TAKEN BY QC MANAGER	RESOLUTION	DATE COMPLETED

TESTING PLAN AND LOG

CONTRACT NUMBER	PROJECT TITLE AND LOCATION	CONTRACTOR

SPECIFICATION SECTION AND PARAGRAPH NUMBER	ITEM OF WORK	TEST REQUIRED	ACCREDITED/ APPROVED LAB		SAMPLED BY	TESTED BY	LOCATION OF TEST		FREQUENCY	DATE COMPLETE	DATE FORWARDED TO CONTR. OFF.	REMARKS
			YES	NO			ON SITE	OFF SITE				

Page _____ of _____

SECTION 01560

ENVIRONMENTAL PROTECTION

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only.

CODE OF FEDERAL REGULATIONS (CFR)

40 CFR 261	Identification and Listing of Hazardous Waste
40 CFR 262	Generators of Hazardous Waste
40 CFR 263	Transporters of Hazardous Waste
40 CFR 264	Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities
49 CFR 178	Shipping Container Specification

1.2 RELATED SECTIONS

Section 02990, "Hazardous Materials Management".

1.3 DEFINITIONS

1.3.1 Sediment

Soil and other debris that have eroded and have been transported by runoff water or wind.

1.3.2 Solid Waste

Rubbish, debris, garbage, and other discarded solid materials, except hazardous waste as defined in paragraph entitled "Hazardous Waste," resulting from industrial, commercial, and agricultural operations and from community activities.

1.3.3 Rubbish

Combustible and noncombustible wastes such as paper, boxes, glass, crockery, metal, lumber, cans, and bones.

1.3.4 Debris

Combustible and noncombustible wastes such as ashes and waste materials resulting from construction or maintenance and repair work, leaves, and

tree trimmings.

1.3.5 Chemical Wastes

This includes salts, acids, alkalies, herbicides, pesticides, organic chemicals, and spent products which serve no purpose.

1.3.6 Sanitary Wastes

1.3.6.1 Sewage

Wastes characterized as domestic sanitary sewage.

1.3.6.2 Garbage

Refuse and scraps resulting from preparation, cooking, dispensing, and consumption of food.

1.3.7 Hazardous Waste

Hazardous substances as defined in 40 CFR 261 or as defined by applicable state and local regulations.

1.3.8 Oily Waste

Petroleum products and bituminous materials.

1.4 SUBMITTALS

Submit the following in accordance with Section 01300, "Submittals."

1.4.1 SD-18, Records

a. Solid waste disposal permit G
b. Disposal permit for hazardous waste G

1.4.1.1 Solid Waste Disposal Permit

Submit one copy of a state and local permit or license showing such agencies' approval of the disposal plan.

1.4.1.2 Disposal Permit for Hazardous Waste

Submit a copy of the applicable EPA and state permits or licenses for transportation, treatment, storage, and disposal of hazardous waste by permitted facilities.

1.5 ENVIRONMENTAL PROTECTION REQUIREMENTS

Provide and maintain, during the life of the contract, environmental protection as defined. Plan for and provide environmental protective measures to control pollution that develops during normal construction practice. Plan for and provide environmental protective measures required to correct conditions that develop during the construction of permanent or temporary environmental features associated with the project. Comply with

Federal, state, and local regulations pertaining to the environment, including but not limited to water, air, and noise pollution.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

3.1 PROTECTION OF NATURAL RESOURCES

Preserve the natural resources within the project boundaries and outside the limits of permanent work. Restore to an equivalent or improved condition upon completion of work. Confine construction activities to within the limits of the work indicated or specified.

3.1.1 Land Resources

Except in areas to be cleared, do not remove, cut, deface, injure, or destroy trees or shrubs without the Contracting Officers permission. Do not fasten or attach ropes, cables, or guys to existing nearby trees for anchorages unless authorized by the Contracting Officer. Where such use of attach ropes, cables, or guys is authorized, the Contractor shall be responsible for any resultant damage.

3.1.1.1 Protection

Protect existing trees which are to remain and which may be injured, bruised, defaced, or otherwise damaged by construction operations. Remove displaced rocks from uncleared areas. By approved excavation, remove trees with 30 percent or more of their root systems destroyed.

3.1.1.2 Replacement

Remove trees and other landscape features scarred or damaged by equipment operations, and replace with equivalent, undamaged trees and landscape features. Obtain Contracting Officer's approval before replacement.

3.1.1.3 Temporary Construction

Remove traces of temporary construction facilities such as haul roads, work areas, structures, foundations of temporary structures, stockpiles of excess or waste materials, and other signs of construction. Grade temporary roads, parking areas, and similar temporarily used areas to conform with surrounding contours.

3.1.2 Water Resources

3.1.2.1 Oily Wastes

Prevent oily or other hazardous substances from entering the ground, drainage areas, or local bodies of water. Surround all temporary fuel oil or petroleum storage tanks with a temporary earth berm of sufficient size and strength to contain the contents of the tanks in the event of leakage or spillage.

3.1.3 Fish and Wildlife Resources

Do not disturb fish and wildlife. Do not alter water flows or otherwise significantly disturb the native habitat adjacent to the project and critical to the survival of fish and wildlife, except as indicated or specified.

3.2 HISTORICAL AND ARCHAEOLOGICAL RESOURCES

Carefully protect in-place and report immediately to the Contracting Officer historical and archaeological items or human skeletal remains discovered in the course of work. Stop work in the immediate area of the discovery until directed by the Contracting Officer to resume work.

3.2.1 Designated Areas

The Government will monitor work in the areas to be determined later. Submit a work schedule for approval for these areas and notify the Contracting Officer 30 calendar days prior to starting work in these areas. Changes to the approved work schedule must be approved by the Contracting Officer 48 hours prior to commencing on that portion of work.

3.3 EROSION AND SEDIMENT CONTROL MEASURES

3.3.1 Burnoff

Burnoff of the ground cover is not permitted.

3.3.2 Protection of Erodible Soils

Immediately finish the earthwork brought to a final grade, as indicated or specified. Immediately protect the side slopes and back slopes upon completion of rough grading. Plan and conduct earthwork to minimize the duration of exposure of unprotected soils.

3.3.3 Temporary Protection of Erodible Soils

Use the following methods to prevent erosion and control sedimentation:

3.3.3.1 Mechanical Retardation and Control of Runoff

Mechanically retard and control the rate of runoff from the construction site. This includes construction of diversion ditches, benches, and berms to retard and divert runoff to protected drainage courses.

3.3.3.2 Sediment Basins

Trap sediment in temporary sediment basins. Select a basin size to accommodate the runoff of a local 50-year storm. Pump dry and remove the accumulated sediment, after each storm. Use a paved weir or vertical overflow pipe for overflow. Remove collected sediment from the site. Institute effluent quality monitoring programs.

3.3.3.3 Borrow

Permit only in areas where suitable environmental controls are possible.

3.3.3.4 Vegetation and Mulch

Provide temporary protection on sides and back slopes as soon as rough grading is completed or sufficient soil is exposed to require erosion protection. Protect slopes by accelerated growth of permanent vegetation, temporary vegetation, mulching, or netting. Stabilize slopes by hydroseeding, anchoring mulch in place, covering with anchored netting, sodding, or such combination of these and other methods necessary for effective erosion control.

a. Seeding: Provide new seeding where ground is disturbed. Include topsoil or nutriment during the seeding operation necessary to reestablish a suitable stand of grass. The seeding operation shall be as specified in Section 02220, "General Excavation, Filling, and Backfilling".

3.4 CONTROL AND DISPOSAL OF SOLID AND SANITARY WASTES

Pick up solid wastes, and place in containers which are regularly emptied. Do not prepare, cook, or dispose of food on the project site. Prevent contamination of the site of other areas when handling and disposing of wastes. On completion, leave the areas clean. Control and dispose of waste.

3.4.1 Disposal of Rubbish, Garbage and Debris

Remove and dispose rubbish, garbage and debris from Government property.

3.4.2 Sewage, Odor, and Pest Control

Use chemical toilets or comparably effective units, and periodically empty wastes into a muncipal or district sanitary sewage system, or construct and maintain an approved type of adequate sanitary convenience for the use of persons employed on the work in accordance with the General Paragraphs titled, "SANITATION." Include provisions for pest control and elimination of odors.

3.5 CONTROL AND DISPOSAL OF HAZARDOUS WASTE

3.5.1 Hazardous Type Waste

Store hazardous waste in approved containers (49 CFR 178) properly labeled to identify the type of waste and the date the container was filled. Remove the containers from the project site, and store and dispose of hazardous waste in accordance with 40 CFR 263 and 40 CFR 264 and Section 02990, "Hazardous Materials Management." For oil and hazardous material spills, notify the Contracting Officer immediately.

3.5.2 Petroleum Products

Conduct the fueling and lubricating of equipment and motor vehicles to protect against spills and evaporation. Dispose of lubricants to be

discarded and all excess oil.

3.5.3 Lead-Acid Battery Electrolyte

Dispose of electrolyte solution from lead-acid batteries. Do not dump electrolyte onto the ground or into storm drains or sanitary sewers. Use one of the following alternatives for disposal of waste electrolyte:

a. An industrial waste treatment plant, if available and approved by the Contracting Officer for neutralizing and disposing of battery acid electrolyte.

b. Transport the electrolyte to a state-approved hazardous waste disposal site. The method of transportation and equipment shall comply with applicable Federal and state regulations.

3.6 DUST CONTROL

Keep dust down at all times, including during nonworking periods. Sprinkle or treat, with dust suppressants, the soil at the site, haul roads, and other areas disturbed by operations. Dry power brooming will not be permitted. Instead, use vacuuming, wet mopping, wet sweeping, or wet power brooming. Air blowing will be permitted only for cleaning nonparticulate debris such as steel reinforcing bars except as otherwise specified. Only wet cutting will be permitted for cutting concrete blocks, concrete, and bituminous concrete. Do not unnecessarily shake bags of cement, concrete mortar, or plaster.

3.7 NOISE

Make the maximum use of low-noise emission equipment. Blasting or use of explosives will not be permitted.

3.8 HAZARDOUS WASTE GENERATION

Handle generated hazardous waste in accordance with 40 CFR 262.

3.9 HAZARDOUS WASTE DISPOSAL

Dispose of hazardous waste in accordance with 40 CFR 263 and 40 CFR 264 and Section 02990, "Hazardous Materials Management."

-- End of Section --

SECTION 02102

CLEARING AND GRUBBING

PART 1 GENERAL

1.1 REQUIREMENTS

Unless indicated otherwise, remove trees, stumps, logs, shrubs, and brush within the clearing limits. Remove stumps entirely. Grub out matted roots and roots over 2 inches in diameter to at least 18 inches below existing surface.

1.2 SUBMITTALS

Submit the following in accordance with Section 01300, "Submittals."

1.2.1 SD-04, Drawings

a. Clearing and Grubbing Plan G

1.3 NOTICE REGARDING THE USE OF OZONE DEPLETING SUBSTANCES

Class I Ozone Depleting Substances as defined in Section 602(a) of The Clean Air Act and as listed below shall not be used in any manner in the performance of this contract. This prohibition against the use of Class I Ozone Depleting Substances shall be considered to prevail over any other provision, specification, drawing, including but not limited to, any documents incorporated by reference, or any other term and condition of this contract whatsoever which might otherwise authorize or appear to authorize the use of Class I Ozone Depleting Substances in the performance of this contract. Further, this prohibition against the use of Class I Ozone Depleting Substances shall not relieve the Contractor from fulfilling its obligations under this contract and the Contractor shall not be entitled to any equitable adjustment in the contract price or time as a result of not being able to use these substances to perform the work under this contract.

Class I Ozone Depleting Substances are as follows:

chlorofluorocarbon-11 (CFC-11)
chlorofluorocarbon-12 (CFC-12)
chlorofluorocarbon-13 (CFC-13)
chlorofluorocarbon-111 (CFC-111)
chlorofluorocarbon-112 (CFC-112)
chlorofluorocarbon-113 (CFC-113)
chlorofluorocarbon-114 (CFC-114)
chlorofluorocarbon-115 (CFC-115)
chlorofluorocarbon-211 (CFC-211)
chlorofluorocarbon-212 (CFC-212)
chlorofluorocarbon-213 (CFC-213)
chlorofluorocarbon-214 (CFC-214)
chlorofluorocarbon-215 (CFC-215)
chlorofluorocarbon-216 (CFC-216)

chlorofluorocarbon-217 (CFC-217)
halon-1211
halon-1301
halon-2402
carbon tetrachloride
methyl chloroform

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

3.1 PROTECTION

3.1.1 Roads and Walks

Keep roads and walks free of dirt and debris at all times.

3.1.2 Trees, Shrubs, and Existing Facilities

Protection shall be in accordance with Section 01560, "Environmental Protection."

3.2 CLEARING

Shall consist of the felling, trimming, and cutting of trees into sections and the satisfactory disposal of the trees and other vegetation designated for removal, including downed timber, snags, brush, and rubbish occurring within the areas to be cleared. Cut off flush with or below the original ground surface trees, stumps, roots, brush, and other vegetation in areas to be cleared, except for trees and vegetation indicated or directed to be left standing.

3.3 TREE REMOVAL

Where indicated, remove designated trees and stumps and grub roots.

3.4 GRUBBING

Remove and dispose of roots larger than 3 inches in diameter, matted roots, and designated stumps from the indicated grubbing areas. Fill depressions made by grubbing with suitable material and compact in accordance with the requirements specified in Section 02220, "General Excavation, Filling, and Backfilling," to make the new surface conform with the existing adjacent surface of the ground.

3.5 DISPOSAL OF CLEARED AND GRUBBED MATERIALS

Remove from the project site and dispose of off station timber, scrub, vegetation, and debris considered as nonsaleable. Burning will not be permitted.
-- End of Section --

SECTION 02220

GENERAL EXCAVATION, FILLING, AND BACKFILLING

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only.

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM C 136	1984 (Rev. A) Sieve Analysis of Fine and Coarse Aggregates
ASTM D 698	1978 (R 1990) Moisture-Density Relations of Soils and Soil-Aggregate Mixtures Using 5.5-lb (2.49-kg) Rammer and 12-in. (305-mm) Drop
ASTM D 1140	1954 (R 1990) Amount of Material in Soils Finer Than the No. 200 (75-Micrometer) Sieve
ASTM D 1556	1990 Density of Soil in Place by the Sand-Cone Method
ASTM D 1557	1978 (R 1990) Moisture-Density Relations of Soils and Soil-Aggregate Mixtures Using 10-lb (4.54-kg) Rammer and 18-in. (457-mm) Drop
ASTM D 2487	1990 Classification of Soils for Engineering Purposes
ASTM D 4318	1984 Liquid Limit, Plastic Limit, and Plasticity Index of Soils

COMMERCIAL ITEM DESCRIPTIONS (CID)

CID A-A-1909	Fertilizer

CORPS OF ENGINEERS (COE)

COE EM-385-1-1	1992 Safety and Health Requirements Manual

1.2 DEFINITIONS

1.2.1 Hard Materials

Weathered rock, dense consolidated deposits, or conglomerate materials which are not included in the definition of "rock" but which usually

require the use of heavy excavation equipment, ripper teeth, or jack hammers for removal.

1.2.2 Rock

Solid homogeneous interlocking crystalline material with firmly cemented, laminated, or foliated masses or conglomerate deposits, neither of which can be removed without systematic drilling and blasting, drilling and the use of expansion jacks or feather wedges, or the use of backhoe-mounted pneumatic hole punchers or rock breakers; also large boulders, buried masonry, or concrete other than pavement exceeding 1/2 cubic yard in volume. Removal of hard material will not be considered rock excavation because of intermittent drilling and blasting that is performed merely to increase production.

1.2.3 Cohesive Materials

Materials ASTM D 2487 classified as GC, SC, ML, CL, MH, and CH. Materials classified as GM and SM will be identified as cohesive only when the fines have a plasticity index greater than zero.

1.2.4 Cohesionless Materials

Materials ASTM D 2487 classified as GW, GP, SW, and SP. Materials classified as GM and SM will be identified as cohesionless only when the fines have a plasticity index of zero.

1.3 SUBMITTALS

Submit the following in accordance with Section 01300, "Submittals."

1.3.1 SD-04, Drawings

a. Supporting system drawings G

1.3.1.1 Required Drawings

Submit drawings and calculations by a registered professional engineer. Drawings shall include material sizes and types, arrangement of members, and the sequence and method of installation and removal.

1.3.2 SD-05, Design Data

a. Supporting system calculations G

1.3.2.1 Required Data

Submit drawings and calculations by a registered professional engineer. Calculations shall include data and references used.

1.3.3 SD-08, Statements

a. Supporting systems work plan G

Submit before starting work.

1.3.4 SD-12, Field Test Reports

a. Fill and backfill test Ǵ

1.4 DELIVERY, STORAGE, AND HANDLING

Perform in a manner to prevent contamination or segregation of materials.

1.5 CRITERIA FOR BIDDING

Base bids on the following criteria:

a. Surface elevations are as indicated.

b. Pipes or other artificial obstructions, except those indicated, will not be encountered.

1.6 NOTICE REGARDING THE USE OF OZONE DEPLETING SUBSTANCES

Class I Ozone Depleting Substances as defined in Section 602(a) of The Clean Air Act and as listed below shall not be used in any manner in the performance of this contract. This prohibition against the use of Class I Ozone Depleting Substances shall be considered to prevail over any other provision, specification, drawing, including but not limited to, any documents incorporated by reference, or any other term and condition of this contract whatsoever which might otherwise authorize or appear to authorize the use of Class I Ozone Depleting Substances in the performance of this contract. Further, this prohibition against the use of Class I Ozone Depleting Substances shall not relieve the Contractor from fulfilling its obligations under this contract and the Contractor shall not be entitled to any equitable adjustment in the contract price or time as a result of not being able to use these substances to perform the work under this contract.

Class I Ozone Depleting Substances are as follows:

chlorofluorocarbon-11 (CFC-11)
chlorofluorocarbon-12 (CFC-12)
chlorofluorocarbon-13 (CFC-13)
chlorofluorocarbon-111 (CFC-111)
chlorofluorocarbon-112 (CFC-112)
chlorofluorocarbon-113 (CFC-113)
chlorofluorocarbon-114 (CFC-114)
chlorofluorocarbon-115 (CFC-115)
chlorofluorocarbon-211 (CFC-211)
chlorofluorocarbon-212 (CFC-212)
chlorofluorocarbon-213 (CFC-213)
chlorofluorocarbon-214 (CFC-214)
chlorofluorocarbon-215 (CFC-215)
chlorofluorocarbon-216 (CFC-216)
chlorofluorocarbon-217 (CFC-217)
halon-1211
halon-1301

halon-2402
carbon tetrachloride
methyl chloroform

PART 2 PRODUCTS

2.1 SOIL MATERIALS

Free of debris, roots, wood, scrap material, vegetation, refuse, soft unsound particles, and frozer, deleterious, or objectionable materials. Unless specified otherwise, the maximum particle diameter shall be one-half the lift thickness at the intended location.

2.1.1 Backfill and Fill Material

ASTM D 2487, classification GW, GP, GM, SW, SP, SM, with a maximum ASTM D 4318 liquid limit of 35, maximum ASTM D 4318 plasticity index of 12, and a maximum of 25 percent by weight passing ASTM D 1140, No. 200 sieve.

2.1.2 Topsoil

Natural, friable soil representative of productive, well-drained soils in the area, free of subsoil, stumps, rocks larger than one inch diameter, brush, weeds, toxic substances, and other material detrimental to plant growth. Amend topsoil pH range to obtain a pH of 5.5 to 7.

2.2 BORROW

Obtain borrow materials required in excess of those furnished from excavations from sources outside of Government property. Any borrowed backfill material shall be of virgin quality, free of trash, ice, snow, tree stumps, roots and other organic and deleterious materials.

PART 3 EXECUTION

3.1 SURFACE PREPARATION

3.1.1 Clearing and Grubbing

As required by Section 02102, "Clearing and Grubbing."

3.1.2 Stripping

Strip existing topsoil to a depth of 4 inches without contamination by subsoil material. Stockpile topsoil separately from other excavated material and locate convenient to finish grading area.

3.1.3 Unsuitable Material

Remove vegetation, debris, decayed vegetable matter, sod, mulch, and rubbish underneath paved areas or concrete slabs.

3.2 PROTECTION

3.2.1 Protection Systems

Provide shoring, bracing, cribbing, and/or sheeting in accordance with COE EM-385-1-1. Provide supporting systems where indicated. Supporting systems may be removed or left in place if removed to two feet below finished grade.

3.2.2 Site Drainage

Provide for the collection and disposal of surface and subsurface water encountered during construction.

3.2.2.1 Surface Drainage

So that construction operations progress successfully, completely drain construction site during periods of construction to keep soil materials sufficiently dry. Provide temporary ditches, swales, and other drainage features and equipment as required to maintain dry soils. When unsuitable working platforms for equipment operation and unsuitable soil support for subsequent construction features develop, remove unsuitable material and provide new soil material as specified herein.

3.2.2.2 Subsurface Drainage

Base on site surface and subsurface conditions, available soil, and hydrological data. Remove water by pumping or other methods to prevent softening of surfaces exposed by excavation and store, treat and manage water in accordance with Section 02990, "Hazardous Materials Management". Use filters on dewatering devices to prevent removal of fines from soil. Provide erosion control at outlet of piping to prevent erosion. Operate dewatering system to the minimum extent required until construction work below existing water levels is complete. Submit performance records weekly.

3.2.3 Underground Utilities

Location of the existing utilities indicated is approximate. The Contractor shall physically verify the location and elevation of the existing utilities indicated prior to starting construction. The Contractor shall contact the Public Works Department for assistance in locating existing utilities.

3.2.4 Machinery and Equipment

Movement of construction machinery and equipment over pipes during construction shall be at the Contractor's risk. Repair, or remove and provide new pipe for existing or newly installed pipe that has been displaced or damaged.

3.3 EXCAVATION

Excavate, stockpile, test and manage materials to contours, elevation, and dimensions indicated on the Contract Drawings and in accordance with

Section 02990, "Hazardous Materials Management". Reuse excavated materials that meet the specified requirements for the material type required at the intended location. Keep excavations free from water. Excavate soil disturbed or weakened by Contractor's operations, soils softened or made unsuitable for subsequent construction due to exposure to weather. Refill with backfill and fill material and compact to 85 percent of ASTM D 698 maximum density. Unless specified otherwise, refill excavations cut below indicated depth with backfill and fill material and compact to 85 percent of ASTM D 698 maximum density.

3.3.1 Hard Material and Rock Excavation

Remove hard material and rock only if required by the Contracting Officer. Removal of hard material and rock beyond lines and grades indicated unless previously authorized by the Contracting Officer will not be grounds for a claim for additional payment.

3.4 FILLING AND BACKFILLING

Fill and backfill to contours, elevations, and dimensions indicated. Compact each lift before placing overlaying lift.

3.4.1 Backfill and Fill Placement

Provide for general backfill. Place in 12-inch lifts. Compact areas not accessible to rollers or compactors with mechanical hand tampers. Aerate material excessively moistened by rain to a satisfactory moisture content. Finish to a smooth surface by blading, rolling with a smooth roller, or both.

3.5 COMPACTION

Expressed as a percentage of maximum density. Determine in-place density of existing subgrade; if required density exists, no compaction of existing subgrade will be required.

3.5.1 General Site

Compact underneath areas designated for vegetation and areas outside the 5-foot line of the structure to 85 percent of ASTM D 698.

3.6 FINISH OPERATIONS

3.6.1 Grading

Finish grades as indicated within one-tenth of one foot. Grade areas to drain water away from structures. For existing grades that will remain but which were disturbed by Contractor's operations, grade as directed.

3.6.2 Seed

Scarify existing subgrade. Provide 4 inches of topsoil for newly graded finish earth surfaces and areas disturbed by the Contractor. If there is insufficient on-site topsoil meeting specified requirements for topsoil, provide topsoil required in excess of that available. Seed shall match

existing vegetation. Provide seed at 5 pounds per 1000 square feet. Provide CID A-A-1909, Type I, Class 2, 10-10-10 analysis fertilizer at 25 pounds per 1000 square feet. Provide commercial agricultural limestone of 94-80-14 analysis at 70 pounds per 1000 square feet. Provide mulch and water to establish an acceptable stand of grass.

3.6.3 Protection of Surfaces

Protect newly graded areas from traffic, erosion, and settlements that may occur. Repair or reestablish damaged grades, elevations, or slopes.

3.7 DISPOSITION OF SURPLUS MATERIAL

Remove from Government property surplus or other soil material not required or unsuitable for filling or backfilling, and brush, refuse, stumps, roots, and timber. Dispose of contaminated materials in accordance with Section 02290, "Hazardous Materials Management."

3.8 FIELD QUALITY CONTROL

3.8.1 Sampling of Fill and Backfill

Take the number and size of samples required to perform the following tests.

3.8.2 Testing of Fill and Backfill

Perform one of each of the following tests for each material used. Provide additional tests for each source change.

3.8.2.1 Fill and Backfill Material Testing

Test fill and backfill material in accordance with ASTM C 136 for conformance to ASTM D 2487 gradation limits; ASTM D 1140 for material finer than the No. 200 sieve; ASTM D 4318 for liquid limit and for plastic limit; ASTM D 698 or ASTM D 1557 for moisture density relations.

3.8.2.2 Offsite Borrow Testing

Test offsite borrow for full TCLP parameters in accordance with EPA SW-846 test methods. Composite samples and perform one test per every 2,000 cubic yards.

3.8.2.3 Density Tests

Test density in accordance with ASTM D 1556. Test each lift at randomly selected locations every 2000 square feet

-- End of Section --

SECTION 02990

HAZARDOUS MATERIALS MANAGEMENT

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only.

AMERICAN PETROLEUM INSTITUTE (API)

API PUBL 1628	1989 Assessment and Remediation of Underground Petroleum Releases

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM D 4397	1991 Polyethylene Sheeting for Construction, Industrial, and Agricultural Applications

CODE OF FEDERAL REGULATIONS (CFR)

40 CFR 261	Identification and Listing of Hazardous Waste
40 CFR 262	Generators of Hazardous Waste
40 CFR 263	Transporters of Hazardous Waste
40 CFR 268	RCRA Land Disposal Restrictions
40 CFR 280	Owners and Operators of Underground Storage Tanks
29 CFR 1910	Occupational Safety and Health Standards; General Industry
29 CFR 1926	Occupational Safety and Health Standards; Construction Standards.
49 CFR 171	General Information
49 CFR 172	Hazardous Materials
49 CFR 173	General Shipping Requirements
49 CFR 177	Transporter Requirements

ENVIRONMENTAL PROTECTION AGENCY (EPA)

EPA SW-846	1986 Test Methods For Evaluating Solid Waste, Third Edition

SECTION 02990

HAZARDOUS MATERIALS MANAGEMENT

PART 1 GENERAL

1.1 REFERENCES

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40 CFR 268	RCRA Land Disposal Restrictions
40 CFR 280	Owners and Operators of Underground Storage Tanks
29 CFR 1910	Occupational Safety and Health Standards; General Industry
29 CFR 1926	Occupational Safety and Health Standards; Construction Standards.
49 CFR 171	General Information
49 CFR 172	Hazardous Materials
49 CFR 173	General Shipping Requirements
49 CFR 177	Transporter Requirements

ENVIRONMENTAL PROTECTION AGENCY (EPA)

EPA SW-846	1986 Test Methods For Evaluating Solid Waste, Third Edition

EPA 600-4-79-20	1976 Contaminant Monitoring

RHODE ISLAND DEPARTMENT OF ENVIRONMENTAL MANAGEMENT (RIDEM)

DEM-DAHM-WMB-01-92	1992 Rules and Regulation For Hazardous Waste Management
DEM-DWM-UST 05-93	1993 Regulations for Underground Storage Facilities Used For Petroleum Products and Hazardous Materials.
DEM-GW-10-92	1992 Rules and Regulations For Groundwater Quality.
	1990 Oil Pollution Control Rules & Regulations.

NATIONAL FIRE PREVENTION ASSOCIATION (NFPA)

NFPA-30	1990 Flammable and Combustible Liquids Code

1.2 DEFINITIONS

1.2.1 Non-Hazardous Debris

Drums, drum carcasses, transformers, capacitors, containarized liquïd materials and any pure or nearly pure waste material such as crystalline powders, viscous liquids/solids, etc., which occupy more than one cubic yard.

1.2.2 Contaminated Soil and Water

As defined in 1.2.3, 1.2.4, 1.2.5, 1.2.6, 1.2.7.

1.2.3 Hazardous Waste Soil

Soils which are characterized as hazardous waste in accordance with 40 CFR 261 (current edition) or State or Local regulations.

1.2.4 Restricted Non-Hazardous Waste Soil

Soils which are characterized as Restricted Non-Hazardous Soil in accordance with Land Band Disposal Restrictions 40 CFR 268 (current edition) or State or Local regulations.

1.2.5 Rhode Island Regulated Soil

Soils which are characterized as Rhode Island Regulated Soil is classified in accordance with RIDEM Rules and Regulations for Hazardous Waste Management Regulation # DEM-DAHM-WMB-01-92.

1.2.6 Special Water

Water regulated under theFebruary 9, 1993 regulations for the Rhode Island pollutent discharge elimination system.

1.2.7 Hazardous Water

Water which contains free phase oil.

1.3 SITE CHARACTERISTICS

1.3.1 Material To Be Encountered

Two areas of primarily oil contaminated soil (a.- 5,800 sq. ft.; b.- 9,900 sq. ft.) and possibility, hazardous waste and PCB's exist, within the Melville North landfill. These two areas shall be handled as specified herein. Additionally, water encountered during excavation dewatering may also be contaminated with free phase oil and shall be handled as specified herein. The following table identifies the chemical contaminants and concentrations which may be encountered during site work. Additional contaminants and higher or lower concentrations of the contaminants listed below may be encountered.

TABLE 1

Total Petroleum Hydrocarbons	>3% by weight
Total Volatile Organics	6 ppm
Total Semi Volatile Organics	69 ppm
Pesticides/PCBs	14 ppm
Antimony	119 ppm
Arsenic	8 ppm
Cadmium	14 ppm
Chromium	85 ppm
Lead	1430 ppm

1.3.2 Site Description

The Melville North Landfill is located on a privately owned property at the northern end of the Newport Naval Base. The site is approximately eight acres in size and is situated between Defense Highway and Narragansett Bay. The Penn Central Railroad tracks run along the eastern side of the former landfill site. The railroad tracks are oriented in an approximately north-south direction. Access to the site is off the Defense Highway through a gate and along a paved entrance way. The paved entrance way leads down a small hill and across the railroad tracks to the side.

1.3.3 Site History

This site was used as a landfill for at least the period following World War II until 1955. The Melville North Landfill wastes reportedly included soil and construction debris intermixed with spent acids, waste paints, solvent waste oil (diesel fuel, lube) and PCB's. The quantity of these wastes disposed of in the landfill is unknown.

1.4 CRITERIA FOR BIDDING

The contractor's bid shall include unit cost for each of the following listed items.

Item	Unit	Quantity
A. Hazardous Waste Soil; Excavation, Handling, Transportation	10	Cubic Yard
B. Restricted Non-Hazardous Soil; Excavation, Handling, Transportation and off-site Treatment/Disposal	410	Cubic Yard
C. Rhode Island Regulated Soil; Excavation, Handling, Transportation and off-site Treatment/Disposal	3,700	Cubic Yard
D. Non-Hazardous Debris; Excavation, Handling, Transportation and off-site/Disposal	50	Ton
E. Hazardous Water; Collection, Handling, Transportation and off-site Treatment/Disposal	1,000	Gallon
F. Special Water; Collection, Handling, Transportation and off-site Treatment/Disposal	100,000	Gallon
G. Backfill from On-Site Stockpile; Placement and Compaction	3,800	Cubic Yard
H. Backfill From Borrow; Providing, Placement and Compaction	4,100	Cubic Yard
I. Soil Sampling; Collection and submission of soil samples from Soil Stockpiles;	25	Each
J. Soil Sample Analysis;		
1. Total Petroleum Hydrocarbons	60	Each
2. 8240 VOCs	9	Each
3. TCLP VOCs	15	Each
4. TCLP SVOCs	15	Each
5. TCLP Metals	15	Each
6. Ignitablility	9	Each
7. Reactivity	9	Each
8. PCBs	9	Each
9. pH	9	Each
10. Total Lead	9	Each
11. Paint Filter Test	9	Each
K. Water Sample Analysis;		

1. Total Petroleum Hydrocarbons	11	Each
2. 8010 VOCs	11	Each
3. 8020 VOCs	11	Each
4. pH	11	Each

1.5 POTENTIAL DISPOSAL FACILITIES

Contractor shall be responsible for verifying that the final disposal facility meets requirements specified herein. Contractor selection of final disposal facility is not limited to the items listed below.

Potential Disposal Facilities

A. Phoenix Soils, Waterbury, Ct.
B. Turnkey Recycling and Environmental Enterprises, Gonic, NH
C. Chemical Waste Management Chemical Services, Inc., Model City, N.Y.
D. New Milford Landfill and Recycling Center, New Milford, CT
E. Northern Capital Regional Disposal Facility, Inc. Manchester, CT
F. Canterbury Landfill, Yaworski, Inc., Canterbury, CT
G. Norridgewock Landfill, Norridgewock, ME
H. Aggregate Recycling Corp. Portland, ME
I. SRTI of Maryland, Inc., Cockeysville, MD

1.6 DESCRIPTION OF WORK

The work includes the handling, sampling, storage, and off-site transport and treatment/disposal of contaminated soil and water.

1.6.1 Title to Materials

All materials resulting from excavation and any demolition work, except as specified otherwise, shall become the property of the Contractor and shall be disposed of as specified in applicable local, state, and Federal regulations and herein.

1.6.2 Permits, State License, and Notifications

Obtain necessary permits and state licenses in conjunction with hazardous waste soil, land disposal restricted soil, and Rhode Island regulated soil and hazardous water and special water removal, hauling, and disposition. Notify the Regional Office of the United States Environmental Protection Agency (USEPA - Region I.), the Rhode Island Department of Environmental Management, and the Contracting Officer in writing 30 days prior to the commencement of work.

1.6.3 Regulations

Perform work in accordance with local, State, and Federal regulations and 40 CFR 261, 40 CFR 262, 40 CFR 263, 40 CFR 268, 40 CFR 280, 29 CFR 1910, 29 CFR 1926, 49 CFR 171, 49 CFR 172, 49 CFR 173, 49 CFR 177, NFPA-30, DEM-DWM-UST 05-93, DEM-GW-10-92, and DEM 1990 Oil Pollution Control Rules and Regulations.

1.7 SUBMITTALS

Submit the following in accordance with Section 01300, "Submittals."

1.7.1 SD-08, Statements

a. Testing of sidewall sampling and analysis plan G

b. Qualifications G

c. Spill and discharge control plan G

d. Off-site disposal plan G

e. Dewatering Plan G

1.7.1.1 Testing of Sidewalls Sampling and Analysis Plan

Describe methods, means, equipment, sequence of operations and schedule to be employed in temporary stockpiling, handling, and sampling of excavated soil. Fifteen days before beginning soil excavation, submit to the Contracting Officer for approval a material handling plan that describes phases of dealing with the contaminated soil and water as it relates to the soil excavation, including methods of excavating, a material handling plan for the contaminated soil and water, safety precautions and requirements, and water pumping and collection requirements. The material handling plan shall indicate soil stockpile sampling methods.

Describe field sampling methods and quality control procedures to be used for the collection of soil stockpile and contaminated soil and water samples. Identify laboratory and laboratory methods to be used for contaminated soil and water testing. Sample reports shall show sample identification for location, date, time, sample method, contamination level, name of individual sampler, identification of laboratory, analytical method, detection limit, and quality control procedures. Samples of contaminated soil and/or water shall be analyzed using EPA SW-846 test procedures.

1.7.1.2 Qualification

Prior to start of work, submit documentation of recent experience with handling and off-site disposal of hazardous waste soil, land disposal restricted soil, Rhode Island regulated soil and hazardous water and special water, also include resumes of personnel working on the project.

1.7.1.3 Spill and Discharge Control Plan

Describe procedures and plan related to potential spills and discharges of contaminated soils and water.

Develop, implement, and maintain a comprehensive spill and discharge control plan prior to initiating site excavation activities. The plan shall specify design and work practices to prevent, mitigate, and control such releases. The plan shall outline procedures for reporting spills and coordinating response actions with Naval and civil response agencies in the

event of a spill or release. The plan shall specify personnel spill and discharge control procedures.

1.7.1.4 Offsite Disposal Plan

Describe methods, means, equipment, sequence of operations, and schedule employed in transportation and handling of contaminated soil and water to the final destination or location of treatment or disposal facility. Proper disposal facility shall be approved by local, state, and Federal regulations. The off-site disposal plan shall include the most recent copy of all Local, State, and Federal permits and any recent inspection reports from each of the Contractor proposed treatment/disposal facilities. The off-site disposal plan shall also include a letter of acceptance from each proposed treatment/disposal facilities for the type of material proposed to be disposed. Thirty days before transportation of excavated soil submit a copy of the Off-site Disposal Plan to the Contracting officer for approval by written authorization.

a. The Construction Contractor shall arrange for disposal of contaminated soil and/or water at off-site locations appropriate to the material classification, and in accordance with the laws of the appropriate local, State, and Federal authorities. Any additional chemical or physical analyses required by the disposal facility shall be obtained by and at the expense of the Contractor.

b. A subcontractor, licensed to transport contaminated materials, shall be retained by the Contractor to transport contaminated soil and/or water off-site to a suitable waste disposal facility (or facilities), approved by the contracting officer.

c. All contaminated soil or water transported off-site shall be loaded by the Contractor into properly licensed and permitted vehicles and transported directly to the approved facility.

1.7.1.5 DEWATERING PLAN

Describe methods, means, equipment, sequence of operations, and schedule to be employed in dewatering soil excavation. Fifteen days before beginning soil excavation, submit to the Contracting Officer for approval a Dewatering Plan dealing with safety precautions, requirements, and water pumping and collection methods.

1.7.2 SD-09, Reports

a. Laboratory testing reports, including location of soil excavated and associated OVA/FID (organic vapor analyzer/flame ionization device) readings and laboratory test results.

b. Cumulative quantities of contaminated soil of differing contaminant levels excavated, stockpiled, and treated/disposed off-site.

1.7.3 SD-18, Records

a. Results of excavation including sketch showing location of pertinent subsurface features, sampling locations, and extent of excavation G

b. Contaminated soil disposal paperwork, including laboratory testing reports, laboratory QA/QC results, and legible copies of the state approved shipping manifests, prepared signed and dated by an authorized representative of the treatment/disposal facility. G

c. Contaminated water disposal paperwork, such as laboratory testing results and laboratory QA/QC results. G

1.8 QUALIFICATION (CONTRACTOR EXPERIENCE)

Thirty days prior to start of work, submit data to the Contracting Officer showing that the contaminated soil excavation Contractor, subcontractors, and personnel employed on the project have been engaged in excavation, transportation, and disposal of hazardous waste soil, land disposal restricted soil, Rhode Island regulated soil and hazardous water and special water and are familiar with and shall abide with the following:

a. 40 CFR 280, 40 CFR 268, 29 CFR 1910, DEM-DAHM-WMB-01-92, NFPA-30, and State and local regulations and procedures.

b. Applicable safety rules and regulations.

c. Handling and disposal of contaminated soil and water encountered in soil excavation.

d. Excavation, testing, and disposal of contaminated soils, and water.

e. Provide documentation that the contaminated soil excavation and transportation contractor are certified if locality of project has this requirement.

1.9 COMPLIANCE

Comply with applicable local, State, and Federal regulations, procedures, and 40 CFR 280, 40 CFR 268, 29 CFR 1910, NFPA-30, and DEM-DAHM-WMB-01-92

1.10 NOTICE REGARDING THE USE OF OZONE DEPLETING SUBSTANCES

Class I Ozone Depleting Substances as defined in Section 602(a) of The Clean Air Act and as listed below shall not be used in any manner in the performance of this contract. This prohibition against the use of Class I Ozone Depleting Substances shall be considered to prevail over any other provision, specification, drawing, including but not limited to, any documents incorporated by reference, or any other term and condition of this contract whatsoever which might otherwise authorize or appear to

authorize the use of Class I Ozone Depleting Substances in the performance of this contract. Further, this prohibition against the use of Class I Ozone Depleting Substances shall not relieve the Contractor from fulfilling its obligations under this contract and the Contractor shall not be entitled to any equitable adjustment in the contract price or time as a result of not being able to use these substances to perform the work under this contract.

Class I Ozone Depleting Substances are as follows:

chlorofluorocarbon-11 (CFC-11)
chlorofluorocarbon-12 (CFC-12)
chlorofluorocarbon-13 (CFC-13)
chlorofluorocarbon-111 (CFC-111)
chlorofluorocarbon-112 (CFC-112)
chlorofluorocarbon-113 (CFC-113)
chlorofluorocarbon-114 (CFC-114)
chlorofluorocarbon-115 (CFC-115)
chlorofluorocarbon-211 (CFC-211)
chlorofluorocarbon-212 (CFC-212)
chlorofluorocarbon-213 (CFC-213)
chlorofluorocarbon-214 (CFC-214)
chlorofluorocarbon-215 (CFC-215)
chlorofluorocarbon-216 (CFC-216)
chlorofluorocarbon-217 (CFC-217)
halon-1211
halon-1301
halon-2402
carbon tetrachloride
methyl chloroform

PART 2 PRODUCTS

2.1 PLASTIC SHEETING

ASTM D 4397.

PART 3 EXECUTION

3.1 REMOVAL AND STOCKPILE SOIL

Furnish labor, materials, laboratory tests, and reports and equipment sample soil and water to determine if contaminated; dispose of petroleum contaminated soil and liquid. Provide work in accordance with 40 CFR 280, 40 CFR 268, 29 CFR 1910, DEM-DAHM-WMB-01-92, and NFPA-30, and in accordance with appropriate Federal, State, and local regulations.

Excavation and soil handling shall be performed in a manner which limits mixing of soils with different levels and types of contamination to the highest degree possible. The contractor shall segregate contaminated soil into the following four categories which shall be stockpiled independently of each other:

a. Rhode Island Regulated Soil - This category includes soil which

indicates visible petroleum contamination, petroleum odors or sustained non-methane PID or FID readings above 10 units.

b. Restricted Non-hazardous Soil - This category includes soil which indicates sustained elevated concentrations of total volatile organic compounds as measured with a PID or FID of above 100 units and indicates visible petroleum contamination and petroleum odors.

c. Hazardous Waste Soil - This category includes soil which indicates sustained elevated concentrations of total volatile organic compounds as measured with a PID or FID of above 1,000 units and indicates substantial visible petroleum contamination and petroleum odors.

d. Soil that appears unimpacted, from petroleum contamination (which includes debris such as metal scrap, tires, concrete debris, etc.) but which must be excavated to achieve excavation limits must also be stockpiled separately from contaminated soil. All large debris within unimpacted soil shall be decontaminated within the decontamination pad.

Disposal of soil which is contaminated as a result of the Contractor's careless or unauthorized procedures for excavation or soil handling shall be at his own expense.

Transfer of contaminated soil materials from the excavation to the stockpile areas shall be conducted in such a manner as to prevent the spread of contaminated, or potential contaminated materials across the site.

3.2 SPILL AND DISCHARGE CONTROL PLAN

Develop, implement, and maintain a comprehensive spill and discharge control plan. The plan shall provide contingency measures for potential spills and discharges from handling and transportation of contaminated soils and water. A possible source of guidance for assessment and remediation is API PUBL 1628.

3.3 PERSONNEL AND EQUIPMENT DECONTAMINATION

Perform decontamination procedures as specified in Section 02995, "Health, Safety and Emergency Response."

3.4 TEMPORARY CONTAINMENT OF EXCAVATED SOIL

Provide temporary containment area near the excavated area as indicated on the drawings. Cover containment area with 30 mil polyethylene sheeting. Place excavated soil on the impervious barrier and cover with 6 mil polyethylene sheeting. Provide straw bale berm around the outer limits of the containment area and cover with polyethylene sheets. Secure edges of sheets to keep the polyethylene sheeting in place.

3.5 TESTING

3.5.1 Excavation Sampling

In determining final excavation limits, soil samples shall be collected from around the excavated perimeter, at an elevation of one foot above the preconstruction groundwater table (determined by survey from existing monitoring wells) within 2 days of completion of excavation. Discrete soil samples shall be collected at a minimum frequency of one per 50 linear feet of excavation perimeter and shall be analyzed for full TCLP parameters. Furnish results of analysis to the contracting officer within 24 hours after the results are obtained.

3.5.2 Stockpiled Soils

Soils with sustained non-methane flame ionization detector (FID) or photo ionization detector (PID) readings of 10 units or greater, indicate evidence of petroleum discoloration or evidence petroleum odors shall be considered contaminated and shall be segregated from soils which do not exhibit these qualities. Samples shall be collected and analyzed from suspected Rhode Island regulated soil at a minimum frequency of one sample per 150 cubic yards for TPH and paint filter test methods, one sample per 500 cubic yards for TCLP VOCs, TCLP SVOCs, and TCLP metals, ignitability, reactivity, pH, method 8240 VOCs, PCB and total lead.

Soil samples shall be collected from soil which does not indicate evidence of petroleum contamination (no discoloration, odor or PID/FID readings above 10 units) at a frequency of at least one composite sample per 400 cubic yards (composite sample consists of four representative sample locations) and analyze the sample for TPH by EPA method 8015, PCB's, TCLP VOCs, SVOCs, and metals in accordance with 40 CFR 261 and EPA SW-846.

Samples shall be collected and analyzed from suspected hazardous waste soil at a minimum frequency of one sample per 40 cubic yards for TPH, TCLP, VOCs, SVOCs, and metals, ignitability, reactivity, corrosivity, PCBs, total lead, method 8020 VOCs, and paint filter test methods.

Soils which are characterized as hazardous waste in accordance with 40 CFR 261 are considered a hazardous waste and shall be disposed of in accordance with appropriate federal, state and local regulations. Furnish results to the Contracting Officer within 24 hours after the results are obtained.

3.5.3 Contaminated Water Testing

The contaminated water produced as a result of dewatering activities shall be tested and disposed of in accordance with the appropriate federal, state and local regulations. At a minimum, one sample per phase of contaminated water (e.g. oil, water) shall be taken from each 10,000 gallons of contaminated and analyzed for total petroleum hydrocarbons (TPH) by EPA method 8015, volatile organic compounds (VOCs) by EPA methods 8010 and 8020, and pH.

3.6 CONTAMINATED WATER DISPOSAL

Contaminated water produced as result of excavation dewatering activities shall be temporarily stored in an on-site storage tank prior to testing. Contaminated water shall be allowed to separate into phases (e.g. oil and waster) in the tank prior to testing and disposal. If contaminated, transport and dispose of contaminated in accordance with Federal, State, and local requirements.

3.7 EXCAVATION REPORT

Provide the Contracting Officer an excavation Report in a single binder notebook which shall contain a collection of reports, records, inspections, documentation, and data as follows:

a. Description of work, including cubic yards of excavated soil, location of disposal sites, and dates of excavation.

b. Site plan, including location limits of excavation, sampling points, results of excavation, and depths.

c. Laboratory testing reports, copies of data and test results from testing laboratory.

d. Contaminated soil disposal paperwork, and contaminated water disposal paperwork.

e. Certifications required by implementing agency.

f. Cumulative quantities of soil of varying types excavated

g. Photographs before and after backfilling.

3.8 SPILLS OF CONTAMINATED SOILS

Use appropriate vehicles and operating practices to prevent spillage or leakage of contaminated materials from occurring during operations. Inspect vehicles leaving the area of contamination to ensure that no contaminated materials adhere to the wheels or undercarriage.

3.9 BACKFILL

Provide backfill, compaction, grading, and seeding in accordance with Section 02220, "General Excavation, Filling, and Backfilling." Provide barrier around excavation prior to backfilling.

3.10 SITE CONTROL

The Contractor shall be responsible for conducting operations at the site in a manner as to reduce the possibility of contact with any contaminants present and to reduce the possibility of contact with any contaminants present and to prevent the removal of contaminants by personnel or equipment leaving the site.

The Contractor shall delineate the work zones in which specific operations

or tasks will occur and shall institute specific site entry and decontamination procedures for designated Control points. Three (3) work zones shall be established to perform this work: an exclusion zone (EZ), an contamination reduction zone (CRZ) and a support zone (SZ). A major diagram showing the work zones and a description of the site control plan shall be included in the SSHP (Site Safety & Health Plan), Section 02995, Health, Safety, and Emergency Response. The contractor shall include any SOPs pertaining to site control in the SSHP and shall incorporate plans for routine and emergency communications appropriate for the site and project. Spill and discharge control shall be conducted as specified in paragraph 3.6 and in accordance with DEM-DAHM-WMB-01-92.

The contractor shall provide the ROICC Construction manager with a list of all contractors and subcontractor personnel authorized to enter the site prior to start of operations, updating, the list as necessary. The contractor shall keep a daily onsite activities, including: personnel visiting site, affiliation date, arrival time, departure time and purpose of visit.

3.11 Unforeseen Conditions

Should any unforeseen potentially hazardous condition become evident during the performance of work at the site, it shall be the contractor's responsibility to bring such to the attention of the contracting officer for resolution both verbally within one work shift and in within 48 hours. In the interim the contractor shall implement all necessary prudent action to establish and maintain safe working conditions and to safeguard employees, the public, and the environment.

-- End of Section --

SECTION 02995

HEALTH, SAFETY, AND EMERGENCY RESPONSE

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

CODE OF FEDERAL REGULATIONS

29 CFR 1910.120	Occupational Safety and Health Standards; Hazardous Waste Operator Standards
29 CFR 1926	Occupational Safety and Health Standards; Construction Standards

ENVIRONMENTAL PROTECTION AGENCY

EPA PUBLICATION 9285.1-03	1992 Standard Operating Safety Guidelines

RHODE ISLAND DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

RIDEM	Rhode Island Department of Environmental Management

1.2 SCOPE OF WORK

Describe safety and health plan and procedures as related to operations associated with excavaton, handling, and testing of contaminated soils and water. Furnish the name and qualifications based on education, training, and work experience of the proposed Site Safety and Health Officer (SSHO).

This section describes the minimum health, safety, and emergency response requirements for remedial activities at the Removal Action For The Melville North Landfill at Naval Education and Training Center (NETC), Newport, R.I. The responsibility for development, implementation, and enforcement of the Site Safety and Health Plan (SSHP) lies with the Contractor and his health and safety personnel. The SSHP developed by the Contractor shall include at a minimum programs for accident prevention, personnel protection, emergency responses/contingency planning, and air monitoring.

Health and safety requirements shall conform to 29 CFR 1910, 29 CFR 1926, DEM-DAHM-WMB-01-92, EPA PUBLICATION 9285.1-03 and EM 385-1-1 as supplemented by this section. The Contractor shall be familiar with these requirements and demonstrate the ability to perform this scope of work in accordance with these requirements. Controls and procedures specified herein and by the SSHP may be terminated only when the Site Safety and Health Officer (SSHO) determines that hazards have been eliminated.

Information regarding the types of contamination which may be encountered

on-site is found in Section 02060, "Hazardous Material Management."

1.3 SUBMITTALS

Submittals shall be made in accordance with "Submittals", Section 01300.

1.3.1 SD-08, Statements

a. Site Safety and Health Safety Plan. G

b. Qualifications G

1.3.1.1 Site Safety and Health Safety Plan

T he Contractor shall submit four copies of a SSHP to the Contracting Officer for approval prior to the initiation of work.

1.3.1.2 Qualifications

Prior to start of work, submit documentation of recent Health & Safety related experience with petroleum and PCB contaminated soil excavation and handling and resumes of personnel working on the project.

1.4 DEFINITIONS

1.4.1 Contamination Reduction Zone (CRZ)

Transition area between the Exclusion Zone and the Support Zone. The CRZ is designed to reduce the probability that the clean Support Zone will become contaminated or affected from site hazards. Decontamination takes place here.

1.4.2 Certified Industrial Hygienist (CIH)

An industrial hygienist certified by the American Board of Industrial Hygiene.

1.4.3 Decontamination

The process of removing or neutralizing contaminants that have accumulated on personnel and equipment. Decontamination protects workers from hazardous substances that may contaminate and eventually permeate the protective clothing, respiratory equipment, tools, vehicles, and other equipment used onsite; it protects all site personnel by minimizing the transfer of harmful materials into clean areas; it helps prevent mixing of incompatible chemicals; and it protects the community by preventing uncontrolled transportation of contaminants from the site.

1.4.4 Exclusion Zone (EZ)

The portion of the site where contamination does or could occur. The Exclusion Zone includes all areas of contaminated material excavation, handling, and stockpiling.

1.4.5 Site, Safety and Health Plan (SSHP)

A Contractor-prepared document that summarizes the Contractor's safety and health procedures to ensure conformance with 29 CFR 1910, 29 CFR 1926 and DEM-DAHM-WMB-01-92. Additional guidance to be followed during the preparation of the SSHP includes EPA Publication 9285.1-03 and EM 385-1-1.

1.4.6 Site Safety and Health Officer (SSHO)

A safety and health professional hired by the Contractor to direct and perform onsite safety and health monitoring and management activities.

1.4.7 Support Zone (SZ)

The uncontaminated area where workers shall not be exposed to hazardous conditions.

1.4.8 Work Zones

Areas to which access is restricted for purposes of protecting unauthorized individuals and the general public from exposure to physical hazards or hazardous substances. Work Zones include the Exclusion Zone, the Contamination Reduction Zone, the Support Zone, and the access points to each of these zones.

1.5 NOTICE REGARDING THE USE OF OZONE DEPLETING SUBSTANCES

Class I Ozone Depleting Substances as defined in Section 602(a) of The Clean Air Act and as listed below shall not be used in any manner in the performance of this contract. This prohibition against the use of Class I Ozone Depleting Substances shall be considered to prevail over any other provision, specification, drawing, including but not limited to, any documents incorporated by reference, or any other term and condition of this contract whatsoever which might otherwise authorize or appear to authorize the use of Class I Ozone Depleting Substances in the performance of this contract. Further, this prohibition against the use of Class I Ozone Depleting Substances shall not relieve the Contractor from fulfilling its obligations under this contract and the Contractor shall not be entitled to any equitable adjustment in the contract price or time as a result of not being able to use these substances to perform the work under this contract.

Class I Ozone Depleting Substances are as follows:

chlorofluorocarbon-11 (CFC-11)
chlorofluorocarbon-12 (CFC-12)
chlorofluorocarbon-13 (CFC-13)
chlorofluorocarbon-111 (CFC-111)
chlorofluorocarbon-112 (CFC-112)
chlorofluorocarbon-113 (CFC-113)
chlorofluorocarbon-114 (CFC-114)
chlorofluorocarbon-115 (CFC-115)

chlorofluorocarbon-211 (CFC-211)
chlorofluorocarbon-212 (CFC-212)
chlorofluorocarbon-213 (CFC-213)
chlorofluorocarbon-214 (CFC-214)
chlorofluorocarbon-215 (CFC-215)
chlorofluorocarbon-216 (CFC-216)
chlorofluorocarbon-217 (CFC-217)
halon-1211
halon-1301
halon-2402
carbon tetrachloride
methyl chloroform

PART 2 PRODUCTS

NOT USED.

PART 3 EXECUTION

3.1 ORGANIZATIONAL RESPONSIBILITIES

a. Key Personnel and Organizational Chart: The Contractor shall provide, at a minimum, an organizational chart and resumes of key personnel involved in all phases of construction. This chart must include Senior-Level Managment, Project Manager, Site Safety and Health Officer (SSHO), Field Supervisor, and Foreman Personnel.

b. Site Safety and Health Officer (SSHO): The Contractor must employ or contract a qualified individual (e.g., a certified industrial hygienist, safety engineer, etc.) to function as the SSHO for the project. That individual must be responsible to the Contractor and have the authority and knowledge necessary to implement the SSHP and verify compliance with applicable safety and health requirements.

c. At a minimum, the SSHO shall have the following reponsibilities and authority to perform the following functions:

1. Be present at all times during site operations and provide training to on site personnel.

2. Have the authority to enforce the SSHP and stop operations if safety and health personnel may be jeopardized.

3. Effect evacuation of the site if necessary.

4. Evaluate monitoring data to make field decisions regarding safety and health.

d. The SSHO shall meet the following minimum qualifications:

1. Possess a sound working knowledge of State and Federal occupational safety and health regulations and hazardous waste management regulations.

2. Have formal educational training in occupational safety and health.

3. Have a minimum of four (4) years experience in the environmental and health and safety services field, chemical industry, or chemical waste disposal industry more than 50 percent of which must be in the area of industrial hygiene and/or environmental safety.

4. Have a bachelors degree in biology, chemistry, engineering, or other natural or physical science.

   Note: Each graduate degree in occupational safety and health can be subsitituted for one (1) year of experience.

3.2 HAZARD ASSESSMENT

The Contractor shall perform and provide a hazard assessment for each location and operation to be performed. The hazard assessment shall be based on the best information available regarding contaminants and conditions present at the site as listed in Section 02990, "Hazardous Materials Management" as well as the practices and tools to be applied in the operation and shall include but not be limited to the following:

a. A preliminary evaluation of the site's characteristics.

b. An evaluation of the known (including the use of chemical safety data sheets) or suspected contaminants and conditions that may pose inhalation, skin absorption/contact, or ingestion hazards.

c. An evaluation of known or potential safety hazards associated with each task.

d. An overview of the site including descriptions of the operations and tasks to be performed. Include the following:

   1. Size and location of site.
   2. Description of the operation and tasks to be performed.
   3. Approximate duration of the operation and each task.
   4. Site topography and special features (e.g. structures, tanks, etc.).
   5. Known or suspected pathways of contaminant dispersion pertinent to the operation and tasks performed.
   6. Site accessibility.
   7. Safety and health hazards expected on the site.

3.3 EMPLOYEE TRAINING

All Contractor and subcontractor employees that may come in contact with hazardous materials, shall receive health and safety training in accordance with 29 CFR 1910.120. The Contractor shall provide written certification of completed training for all employees designated to engage in on-site activities. Such certification shall be endorsed by the SSHO and be incorporated into the SSHP for the project.

3.3.1 On-Site Training

Prior to starting on-site work, a health and safety training class shall be held by the SSHO to discuss the implementation of the SSHP. Notify the Contracting Officer 24 hours prior to beginning the training class.

3.3.2 Training Outline

Provide the following:

a. Health and safety organization, including discussion of distribution of functions and responsibilities.

b. Organization and components of the SSHP.

c. Physical and chemcal site hazard identification.

d. Basic toxicology and toxicity information.

e. Discussion of the EX and CRZ.

f. Protective clothing.

g. Respiratory protection.

h. Air quality monitoring.

i. Personnel exposure guidelines.

j. Decontamination procedures.

k. Basic first aid review.

l. Emergency procedures and contingency plan.

m. Site entry and exit procedures.

n. Sampling procedures.

3.4 PERSONNEL PROTECTION

The Contractor shall apply engineering and/or work practice controls as a means of protecting personnel in performance of site-specific tasks. Engineering controls shall be implemented to reduce and maintain employee exposure to at or below safe levels for those tasks demonstrating known or suspected hazards. Work practice controls shall be applied when engineering controls are impractical and shall be incorporated as site-specific standard operating procedures (SOPs) for personnel precautions and routine operations.

3.5 PERSONNEL AND EQUIPMENT DECONTAMINATION

All tools and any equipment used to handle any contaminated material shall be decontaminated prior to leaving the work area. This shall include all tools heavy machinery, and excavationg and hauling equipment used during

excavation and handling of contaminated material including the tires, tracks, and under cariages of equipment. If tires/tracks of the excavation equipment become heavily contmaminated they shall be decontaminated so as not to contaminate clean surface soils in other areas of the landfill with the decontamination pad.

Debris with visual evidence of petroleum contamination will be decontaminated by physical removal of oily soil or by steam cleaning prior to placing in with backfill soil.

3.6 EXCLUSION ZONE (EZ) AND CONTANMINATION REDUCTION ZONE (CRZ)

Do not permit personnel not directly involved with the project to enter work zones, called the EZ and CRZ. The EZ shall be a minimum of 20 feet from the limits of the excavation. At the perimeter of the EZ, establish a CRZ. Limits of the CRZ shall be established by the Contractor. Within the CRZ, equipment and personnel shall be cleaned as stated in the paragraph entitled "Personnel and Equipment Decontamination." The Contractor's site office, parking area, and other support facilities shall be located outside the EZ and CRZ. Boundaries of the EZ and CRZ shall be clearly marked and posted. Include a site map, outlining the extent of work zones and location of support facilities, in the SSHP.

3.7 SITE STANDARD OPERATING PROCEDURES (SOPs)

The Contractor shall be responsible for the development and implementation of all necessary SOPs for site operations. The SOPs shall be incorporated into the SSHP.

3.8 CONTINGENCY PLANNING

The Contractor shall develop and implement an Emergency Response Plan (ERP) to handle anticipated on-site emergencies prior to start of site operations. The ERP shall be incorporated into the SSHP as a separate section of that document and shall be periodically reviewed and amended to keep it current with new or changing site conditions or information.

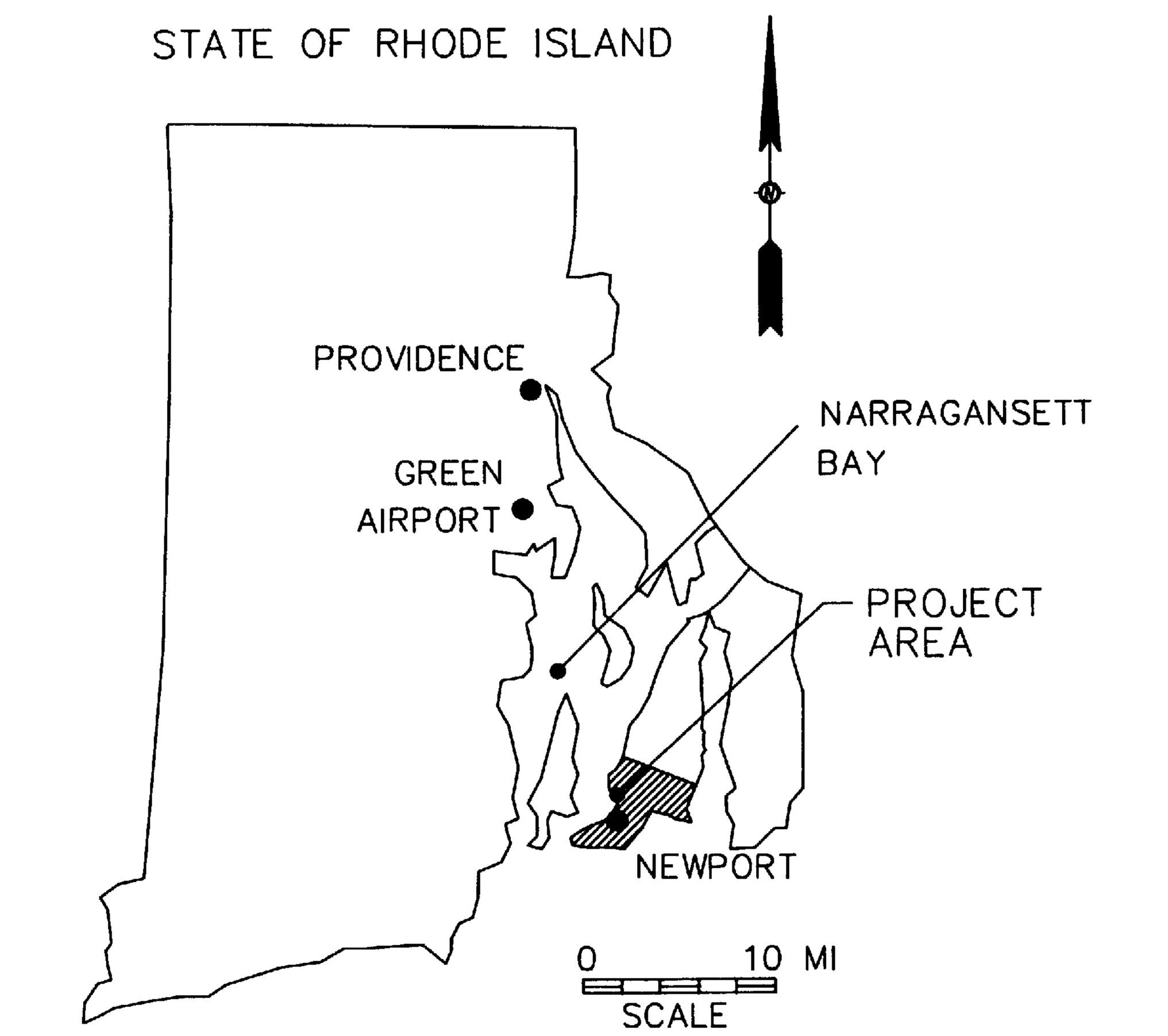
-- End of Section --

REMOVAL ACTION FOR MELVILLE NORTH LANDFILL

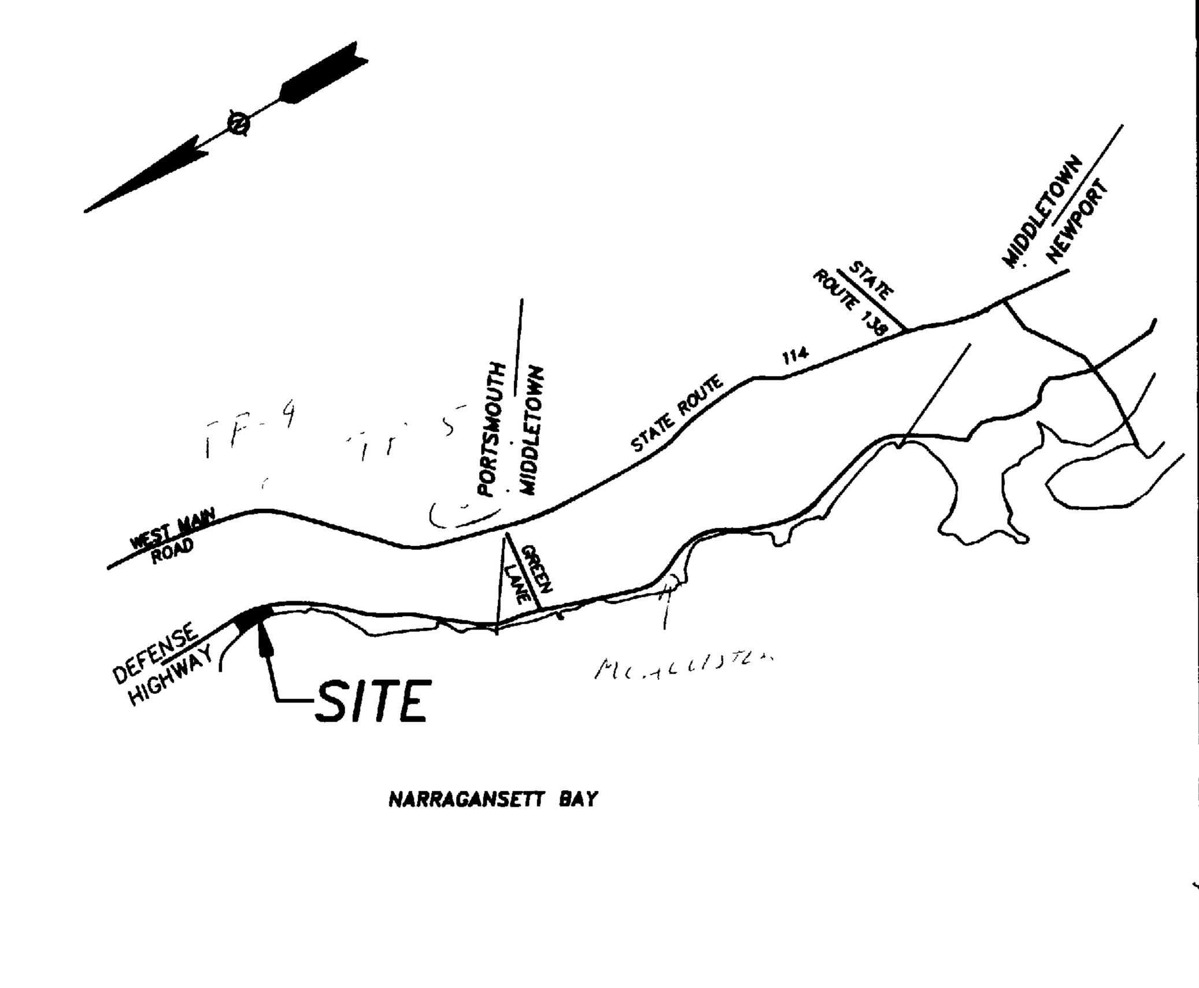
NAVAL EDUCATION AND TRAINING CENTER

NEWPORT, RHODE ISLAND

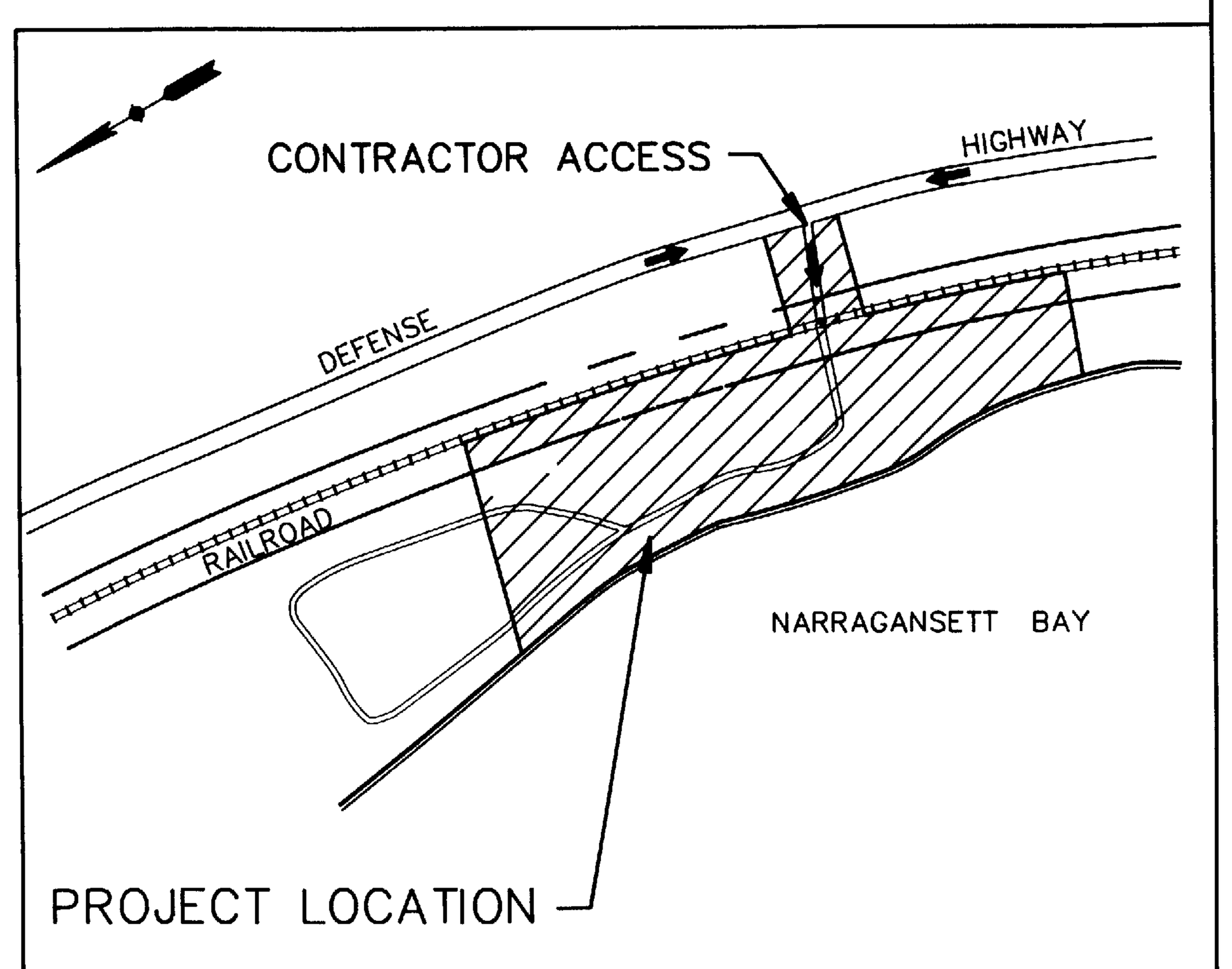
CONSTRUCTION CONTRACT NUMBER N62472-93-C-0293



LOCATION PLAN



VICINITY PLAN



SITE PLAN

ABBREVIATIONS

BLDG	BUILDING
BM	BENCH MARK
℄	CENTERLINE
CLF	CHAIN LINK FENCE
CONC	CONCRETE
DIA./ø	DIAMETER
DIP	DUCTILE IRON PIPE
E	EASTING COORDINATE
ELEV	ELEVATION
GALV	GALVANIZED
GTD	GRADE TO DRAIN
HYD	HYDRANT
ID	INSIDE DIAMETER
INV	INVERT
LF	LINEAR FEET
MAX	MAXIMUM
MIN	MINIMUM
MH	MANHOLE
MW.	MONITORING WELL
MON	MONUMENT
N	NORTHING COORDINATE
NTS	NOT TO SCALE
OC	ON CENTER
OD	OUTSIDE DIAMETER
OHW	OVERHEAD WIRES
PE	POLYETHYLENE
PC	POINT OF CURVATURE
PT	POINT OF TANGENCY
PVC	POLYVINYL CHLORIDE PIPE
R	RADIUS
RCP	REINFORCED CONCRETE PIPE
RR	RAILROAD
SS	SANITARY SEWER
SHT.	SHEET
STA	STATION
STD	STANDARD
TEMP	TEMPORARY
TF	TOP OF FRAME
TYP	TYPICAL
UP	UTILITY POLE
VERT	VERTICAL

INDEX OF DRAWINGS

SHEET		NAVFAC DWG #	TITLE
1	T-1		TTLE SHEET, INDEX AND LOCATION PLAN
2	C-1		EXISTING CONDITIONS AND SITE PREPARATION PLAN
3	C-2		GENERAL SITE PLAN
4	C-3		FINAL GRADING PLAN
5	C-4		GENERAL SITE DETAILS
6	B-1		SOIL BORING LOGS
7	B-2		SOIL BORING LOGS

LEGEND

DESCRIPTION	EXISTING	NEW
SPOT ELEVATION	X 50.6	X 70.5
CONTOUR	100	76
CHAIN LINK FENCE	x x	
ASPHALT CONCRETE PAVEMENT		
DIRT ROAD		
WOODED AREA OR TREE LINE		
TREES		
ELECTRICAL LINE (OVERHEAD)	O H W	
UTILITY POLE		
RAILROAD TRACKS		
RIGHT-OF-WAY LINE		
MONITORING WELL	MW-4	
GEOTECHNICAL BORING	B-1	
TEST PIT AREA	TP-1	
GROUND SURFACE		

REV.	DESCRIPTION	PREP BY	DATE	APPRVD

TRC TRC Environmental Corporation
DSGN: R. NAULT DR: K. HOLLENBECK CHK: C. STOPPER
SUPV: CH ENG:
SUBMITTED BY: Robert C. Smith V.P. 3-17-94
(FIRM MEMBER) (TITLE) (DATE)
NORTHDIV
DM: BD: FPE: DIR:
OFFICER IN CHARGE
APPROVED DATE

DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND
NORTHERN DIVISION
LESTER PENNSYLVANIA
NAVAL EDUCATION AND TRAINING CENTER NEWPORT, RHODE ISLAND
REMOVAL ACTION FOR MELVILLE NORTH LANDFILL
TITLE SHEET, INDEX AND LOCATION PLAN
APPROVED DATE NORTHDIV FOR COMMANDER, NAVFAC

SEAL AREA 3/17/94
STATE OF CONNECTICUT CARL M. STOPPER No. 13286 LICENSED PROFESSIONAL ENGINEER

SAT TO DATE
CODE I.D. NO. 80091
SCALE AS NOTED
SPEC. NO. 04 - 93 - 0293
CONSTRN. CONTR. NO. N62472-93-C-0293
NAVFAC DRAWING NO. 2164976
SHEET 1 OF 7
SIZE D DIS. SH. NO. T-1

C:\10430070\T1104307

CONSTRUCTION LAYOUT SCHEDULE OF COORDINATES

DESCRIPTION	NORTHING	EASTING
N-1	N 180586.273	E 558979.854
N-2	N 180522.005	E 558968.694
N-3	N 180522.160	E 558915.733
N-4	N 180537.403	E 558897.891
N-5	N 180561.367	E 558898.117
N-6	N 180618.251	E 558952.325
S-1	N 180027.005	E 558859.562
S-2	N 179923.388	E 558826.041
S-3	N 179841.948	E 558789.759
S-4	N 179848.321	E 558781.550
S-5	N 179920.858	E 558780.064
S-6	N 179964.670	E 558788.341
S-7	N 180042.531	E 558796.519
S-8	N 180082.487	E 558812.980
S-9	N 180067.646	E 558834.378

TRC Environmental Corporation
DSGN: R. NAULT DR: K. HOLLENBECK CHK: C. STOPPER
SUPV: CH ENG:
SUBMITTED BY: Robert C. Snow V.P. 3-17-94
(FIRM MEMBER) (TITLE) (DATE)
NORTHDIV HD: DM: HD: FPE: DIR:
OFFICER IN CHARGE
APPROVED DATE

REV. DESCRIPTION PREP BY DATE APPRVD

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
NORTHERN DIVISION
LESTER PENNSYLVANIA
NAVAL EDUCATION AND TRAINING CENTER NEWPORT, RHODE ISLAND
REMOVAL ACTION FOR MELVILLE NORTH LANDFILL
GENERAL SITE PLAN
APPROVED DATE NORTHDIV FOR COMMANDER, NAVFAC

SEAL AREA 3/17/94
STATE OF CONNECTICUT — CARL N. STOPPER — LICENSED PROFESSIONAL ENGINEER

SAT TO DATE
CODE I.D. NO. 80091
SCALE AS NOTED
SPEC. NO. 04 - 93 - 0293
CONSTRN. CONTR. NO. N62472-93-C-0293
NAVFAC DRAWING NO. 2164978
SHEET 3 OF 7
SIZE D DIS. SH. NO. C-2

CONTROL POINT #1
CONCRETE MONUMENT – PC OF RR ℄
N 180672.457
E 559111.995
CONTROL POINT #2
CONCRETE MONUMENT – PT OF RR ℄
N 180018.122
E 558958.455
RHODE ISLAND GRID
DEFENSE
HIGHWAY
CONTRACTOR ACCESS
11' GATE
CONCRETE PAVEMENT
ASPHALT
10" CMP
N 180000
E 559200
CONCRETE BOUND
RIGHT OF WAY LINE
STATE OF RHODE ISLAND
DEPARTMENT OF TRANSPORTATION
MAINTAIN RAILROAD AT GRADE CROSSING TO PRE-CONSTRUCTION CONDITIONS THROUGHOUT PROJECT
BENCHMARK
SPIKE IN UP # 7W
EL=19.14
TREES (12" AND LESS CALIPER) AND BRUSH
CONTAMINATION REDUCTION ZONE (TYP.)
DIRT ROAD
TOP OF BANK
15'
50'
LIMITS OF CLEARING AND GRUBBING AND AS NECESSARY TO INSTALL HAYBALE BARRIER
CONTRACTOR STORAGE/LAYDOWN, STOCKPILE AND DECONTAMINATION AREA. GRADE TO PRE-CONSTRUCTION CONDITIONS AND ESTABLISH TURF OVER ALL DISTURBED AREAS UPON COMPLETION OF CONSTRUCTION.
CONTRACTOR TO UPGRADE OR PROVIDE GRAVEL ROADS TO ACCESS WORK AREAS
STONE CONSTRUCTION ENTRANCE
HAYBALE SEDIMENTATION AND EROSION CONTROL BARRIER BEFORE AND DURING CONSTRUCTION ALONG TOP OF BANK AND AS SHOWN (TYP.)
N 180600
E 558800
NARRAGANSETT BAY

NOTES:

1) REFERENCE MAP – THE CONTOUR AND PLAINIMETRIC DATA SHOWN ON THIS MAP ARE BASED UPON A MAP PROVIDED BY SAI SURVEYING CO. TITLED "SITE 01 – 1' CONTOURS, MELVILLE NORTH LANDFILL SITE MAP", SCALE: 1"=60', DATED: 1/18/94.

2) THE APPROXIMATE LOCATION OF UTILITIES SHOWN HAVE BEEN INTERPRETED FROM OTHER MAPS AND SURVEYED LOCATIONS OF ABOVE GROUND FEATURES. CONTRACTOR MUST VERIFY COMPLETENESS AND LOCATIONS WITH NAVY AND STATE DIG SAFE PROGRAM BEFORE COMMENCEMENT OF WORK IN ANY AREA.

3) COORDINATES ARE BASED UPON THE STATE OF RHODE ISLAND COORDINATE GRID SYSTEM, NAD 1927. THE ELEVATION DATUM IS MEAN LOW WATER.

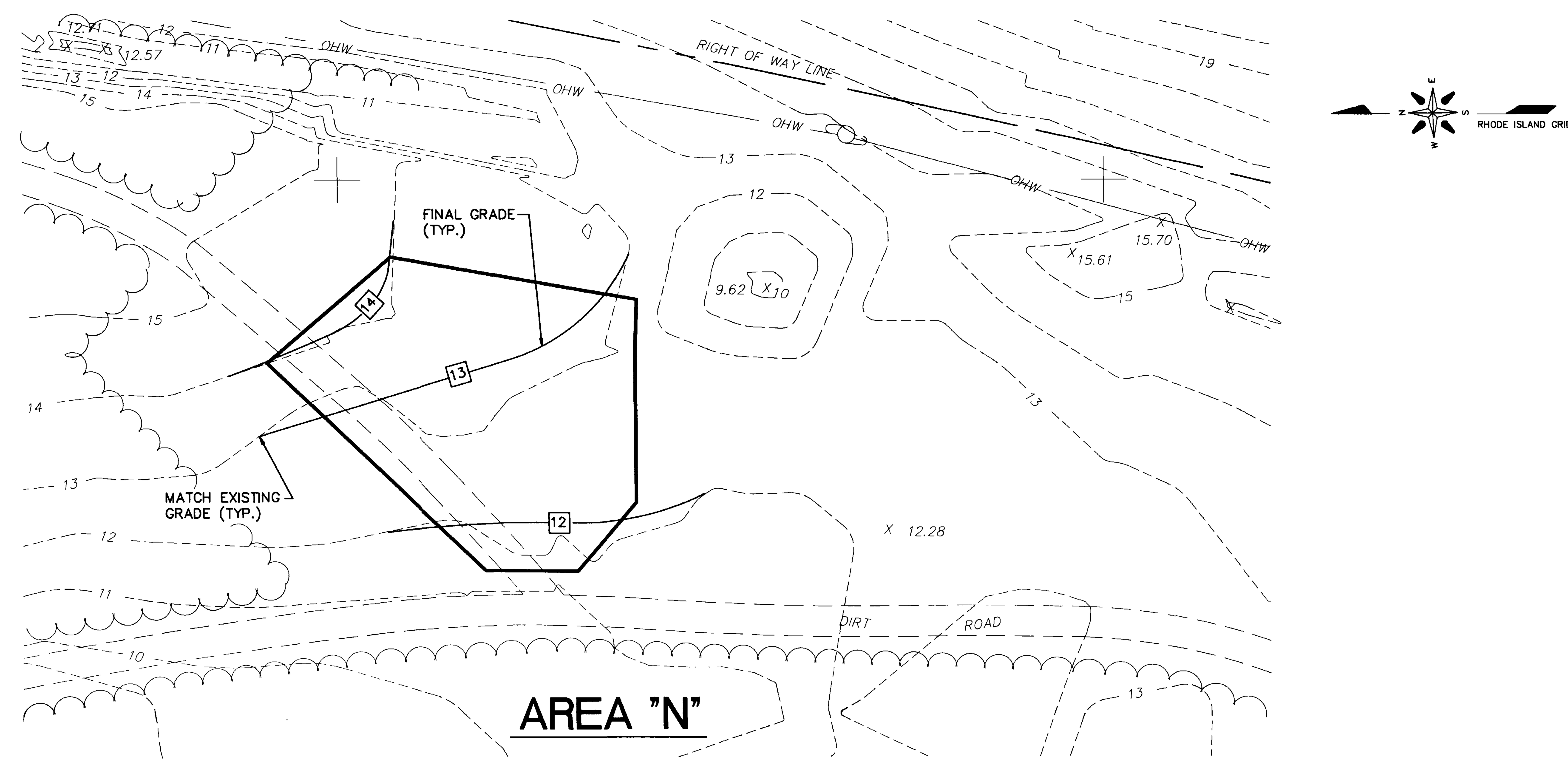
GRAPHIC SCALES
CHECK GRAPHIC SCALES BEFORE USING
30' 15' 0 30'
1"=30'

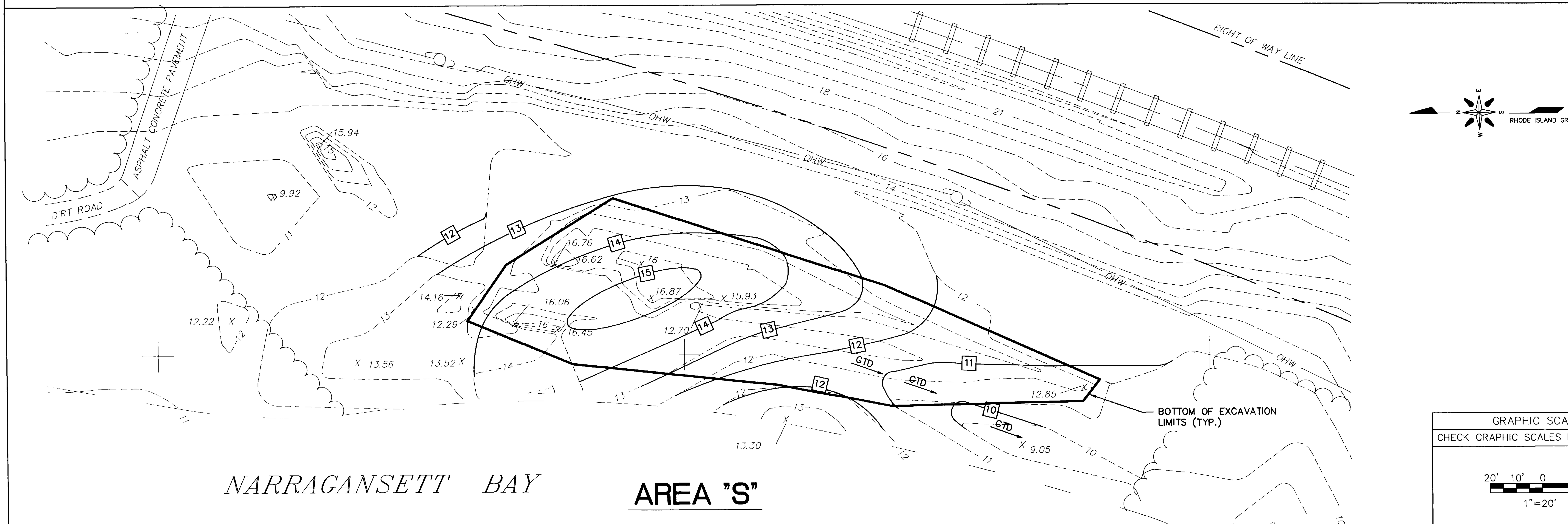
TRC Environmental Corporation
DSGN: R. NAULT DR: K. HOLLENBECK CHK: C. STOPPER

REV. | DESCRIPTION | PREP BY | DATE | APPRVD

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
NORTHERN DIVISION
LESTER PENNSYLVANIA
NAVAL EDUCATION AND TRAINING CENTER NEWPORT, RHODE ISLAND
REMOVAL ACTION FOR MELVILLE NORTH LANDFILL
EXISTING CONDITIONS AND SITE PREPARATION PLAN

CODE I.D. NO. 80091
SCALE AS NOTED
SPEC. NO. 04 – 93 – 0293
CONSTRN. CONTR. NO. N62472-93-C-0293
NAVFAC DRAWING NO. 2164977
SHEET 2 OF 7
SIZE D
DIS. SH. NO. C-1





GRAPHIC SCALES

CHECK GRAPHIC SCALES BEFORE USING

20' 10' 0 20'

1"=20'

REV.	DESCRIPTION	PREP BY	DATE	APPRVD

TRC Environmental Corporation

DSGN: R. NAULT DR: K. HOLLENBECK CHK: C. STOPPER

SUPV: CH ENG:

SUBMITTED BY: Robert C. Smith V.P. 3-17-94 (FIRM MEMBER) (TITLE) (DATE)

NORTHDIV HD: HD: DM: FPE: DIR:

OFFICER IN CHARGE

APPROVED DATE

DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND

NORTHERN DIVISION

LESTER PENNSYLVANIA

NAVAL EDUCATION AND TRAINING CENTER NEWPORT, RHODE ISLAND

REMOVAL ACTION FOR MELVILLE NORTH LANDFILL

FINAL GRADING PLAN

APPROVED DATE NORTHDIV FOR COMMANDER, NAVFAC

SEAL AREA 3/17/94

STATE OF CONNECTICUT CARL W. STOPPER NO. 13256 LICENSED PROFESSIONAL ENGINEER

SAT TO DATE

CODE I.D. NO. 80091

SCALE AS NOTED

SPEC. NO. 04 – 93 – 0293

CONSTRN. CONTR. NO. N62472-93-C-0293

NAVFAC DRAWING NO. 2164979

SHEET 4 OF 7

SIZE D DIS. SH. NO. C-3

C:\10430070\C3104307

TEST PIT TP-1 LOG	
DEPTH	DESCRIPTION
0-1.5	DARK BROWN FILL, MEDIUM SAND, SOME GRAVEL, LITTLE SILT.
1.5-3.5	DARK GRAY FILL, MEDIUM SAND, SOME GRAVEL, LITTLE SILT, METAL DEBRIS, DENSE, 6' DIAMETER BLACK RUBBER FUEL HOSE FOUND INTERSECTING THE PIT AT 3'. BLACK OILY SOIL AT BOTTOM OF PIT. * WEATHERED SHALE (BEDROCK) ENCOUNTERED AT 1.5' DEPTH IN WESTERN 10 FT. OF PIT. * OVA READINGS OF >1,000 PPM ON HEADSPACE OF OILY SOIL SAMPLE, 8-10 PPM ON SOIL PILE, 2 PPM OVER PIT. * GROUND WATER TABLE ENCOUNTERED WITH BLACK OILY SHEEN AT 3.5'. (04/25/90)

TEST PIT TP-2 LOG	
DEPTH	DESCRIPTION
0-3.2	BROWN-GRAY FILL, MEDIUM SAND, SOME GRAVEL, LITTLE SILT, BURNED STUMP AND METAL DEBRIS ALSO ENCOUNTERED. * GROUND WATER TABLE ENCOUNTERED WITH SLIGHT OILY SHEEN AT 3.2'. (4/25/90)

TEST PIT TP-5 LOG	
DEPTH	DESCRIPTION
0-4	GRAY FILL, FINE TO MEDIUM SAND, SOME GRAVEL AND SHALE PIECES. 2' METAL PIPE AND PIECE OF SCAFFOLDING IN BOTTOM OF PIT, BLACK OILY SOIL AT BOTTOM OF PIT. * GROUND WATER TABLE ENCOUNTERED WITH BLACK OILY SHEEN AT 4'. (04/26/90)

TEST PIT TP-6 LOG	
DEPTH	DESCRIPTION
0-1	GRAY FILL, FINE TO MEDIUM SAND, SOME GRAVEL.
1-1.5	RUST-ORANGE METAL AND GLASS FILL, FINE SAND.
1.5-3.5	GRAY SHALE AND GRAVEL, DENSE. * GROUND WATER TABLE ENCOUNTERED WITH SLIGHT OILY SHEEN AT 3.6'. (04/26/90)

TEST PIT TP-7 LOG	
DEPTH	DESCRIPTION
0-2	BROWN-GRAY FILL
2-5.5	RUSTY-ORANGE FILL, DEBRIS, CABLE, BOTTLES, WOOD, MEDIUM-COARSE BROWN SAND, LITTLE GRAVEL. * GROUND WATER TABLE ENCOUNTERED WITH SLIGHT OILY SHEEN AT 5.3'. (04/26/90)

MONITORING WELL MW-3 DRILLING LOG			
DEPTH	BLOWS PER 6' ON SAMPLER	HNU	DESCRIPTION
0-2	26 31 40 43	7	ORGANIC, M-F SAND, SOME SILT, SOME GRAVEL, BLACK TOPSOIL (16') FILL, SHALE AND SILT, GRAY (5')
2-4	31 23 15 8	88	FILL, WEATHERED SHALE, GRAY/BROWN (6')
4-6	5 6 7 19	--	SILT, TRACE GRAVEL, BROWN, STRONG PETROLEUM ODOR (4')
6-8	19 15 7 3	56	NO RECOVERY - STRONG PETROLEUM ODOR ON SPOON
8-10	4 4 12 13	78	FILL, SHALE AND SAND, SOME GRAVEL, BLACK, STRONG PETROLEUM ODOR, WET
10-12	13 16 18 23	50	FINE SAND AND SHALE, BLACK, WET, STRONG ODOR (10') SILT AND SOME FINE SAND, BLACK/BROWN, STRONG ODOR (24') END OF BORING - 12 FT.

MONITORING WELL MW-4 DRILLING LOG			
DEPTH	BLOWS PER 6' ON SAMPLER	HNU	DESCRIPTION
0-2	3 7 8 8	0.4	BROWN SILT AND BLACK ORGANICS (2') WEATHERED SHALE, GRAY (2') C-F GRAVEL, SOME SAND, BLACK (4') SILT, GRAY (4')
2-4	8 10 10 8	0.8	SILT, SOME WEATHERED SHALE, TRACE CLAY, GRAY (18')
4-6	10 11 13 9	2.1	SILT AND ORGANICS, SOME WEATHERED SHALE, GRAY/BROWN, MILD PETROLEUM ODOR (20')
6-8	11 6 5 8	21	SILT, SOME M-F GRAVEL, GRAY, WET, PETROLEUM ODOR (4') SILT, SOME CLAY,
8-10	7 9 23 41	24	BLACK/GRAY, STRONG PETROLEUM ODOR, WET (20')
10-12	16 19 7 11	22	SILT, SOME FINE SAND, BROWN, WET, PETROLEUM ODOR (24')
			M-F SAND, SOME SILT, TRACE ~~GRAVEL, GRAY~~, WET, STRONG PETROLEUM ODOR (24')
	16 18 19 19		SILT AND F-M SAND, TRACE CLAY, BLACK/GRAY (12') END OF BORING - 16 FT.

TRC Environmental Corporation
DSGN S. FARRICK DR K. HOLLENBECK CHK C. STOPPER
SUPV. CH ENG
SUBMITTED BY (DATE) 3-17-94
OFFICER IN CHARGE
APPROVED DATE

REV. DESCRIPTION PREP BY DATE APPRVD

DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND
NORTHERN DIVISION
LESTER PENNSYLVANIA
NAVAL EDUCATION AND TRAINING CENTER NEWPORT, RHODE ISLAND
REMOVAL ACTION FOR MELVILLE NORTH LANDFILL
SOIL BORING LOGS
APPROVED DATE NORTHDIV FOR COMMANDER, NAVFAC

SEAL AREA 3/17/94
STATE OF CONNECTICUT C. S. STOPPER NO. 13256 LICENSED PROFESSIONAL ENGINEER

SAT TO DATE
CODE I.D. NO. 80091
SCALE AS NOTED
SPEC. NO. 04 - 93 - 0293
CONSTRN. CONTR. NO. N62472-93-C-0293
NAVFAC DRAWING NO. 2164982
SHEET 7 OF 7
SIZE D DIS. SH. NO. B-2

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BORING B-14 LOG

DEPTH	BLOWS PER 6' ON SAMPLER	DESCRIPTION
0-2	15 14	0-4' FILL, TOPSOIL. 4-8' FILL, DK BROWN F SAND, LITTLE SILT & GRAVEL. 8-10'
	14 50/4'	FILL, GREY SHALE FRAGS. 10-16' FILL, DK. BROWN F SAND & SILT, TRACE
2-4	15 24	ORGANICS, DRY, NO ODOR
	47 29	0-6' FILL, DK. BROWN F-M SAND, LITTLE GRAVEL & ROCK FRAGMENTS.
4-6	6 8	6-18' FILL, GREY WEATHERED SHALE, DRY, NO ODOR.
	6 4	0-6' FILL, GREY SHALE FRAGMENTS. 6-14' FILL, BLACK F-M SAND, TRACE
6-8	4 13	GRAVEL & GLASS, STRONG PETROLEUM ODOR & STAINING.
	11 10	0-8' BROWN/BLACK F-M SAND, STRONG PETROLEUM ODOR & STAINING, WET.
		8-16' BROWN PEAT.
		SAMPLE MN-B1415 COMPOSITED FROM B-14 (4-6') & (6-8') AND B-15 (6-8').

BORING B-15 LOG

DEPTH	BLOWS PER 6' ON SAMPLER	DESCRIPTION
0-2	6 18	0-4' FILL, TOPSOIL. 4-10' RED/BROWN FILL, F-M SAND, ROCK FRAGMENTS, WIRE
	23 32	PIECE. 10-20' DARK BROWN FILL, NO ODOR, DRY.
2-4	45 42	0-16' BROWN/GRAY FILL, ROCK FRAGMENTS, SOME F-M SAND, PIECE OF WOOD.
	32 20	16-18' DK BROWN FILL, F SAND, NO ODOR, DRY.
4-6	10 10	0-2' DK BROWN FILL, F SAND. 2-4' TAN FILL, F SAND, DRY, NO ODOR.
	7 8	
6-8	24 45	DK BROWN FILL, M-F SAND, TRACE GRAVEL, GLASS & METAL PIECES, STRONG
	54 67	PETROLEUM ODOR & STAINING.
8-10	9 10	LT. BROWN F SAND, SOME SILT, SLIGHT ODOR.
	4 4	
		SAMPLE MN-B1415 COMPOSITED FROM B-14 (4-6') & (6-8') AND B-15 (6-8').

BORING B-16 LOG

DEPTH	BLOWS PER 6' ON SAMPLER	DESCRIPTION
0-2	8 12	0-3' BROWN/GREY FILL, F SAND & SILT, LITTLE ORGANICS. 3-18' FILL, ASPHALT,
	28 16	LITTLE BROWN F-M SAND, TRACE GRAVEL, DRY, NO ODOR.
2-4	8 7	0-3' FILL, ASPHALT FRAGMENTS. 3-16' BROWN FILL, SILT & F SAND, LITTLE
	5 5	WEATHERED SHALE FRAGMENTS, TRACE GRAVEL, MOIST, NO ODOR.
4-6	7 5	0-8' BROWN FILL, SILT AND F SAND, LITTLE SHALE FRAGMENTS. 8-11'
	5 8	BLACK/GREY FILL, M-C SAND, SOME GRAVEL & ROCK FRAGS, 11-16' BROWN F
6-8	3 6	SAND, MOIST, NO ODOR.
	9 12	BROWN F SAND, TRACE ROCK FRAGMENTS, WET, STRONG PETROLEUM ODOR &
8-10	15 20	STAINING.
	23 25	0-6' BROWN F SAND, TRACE ROCK FRAGMENTS. 6-18' BROWN M-C SAND, SOME
		GRAVEL, LITTLE F SAND, WET, STRONG PETROLEUM ODOR.

BORING B-17 LOG

DEPTH	BLOWS PER 6' ON SAMPLER	DESCRIPTION
0-2	5 9	0-9' BROWN/GREY FILL, M-F SAND, SOME GRAVEL & COBBLES, TRACE
	8 10	ORGANICS. 9-18' BROWN/GREY FILL, M-F SAND, SOME ASPHALT & COBBLES,
2-4	26 50/5'	LITTLE GRAVEL, DRY, NO ODOR, BROWN/GREY FILL, F-C SAND, GRAVEL &
		COBBLES, SOME ASPHALT FRAGMENTS, MOIST, NO ODOR. RECOVERY = 5'.
4-6	21 10	BROWN/GREY FILL, F-M SAND, SOME GRAVEL & COBBLES, LITTLE ASPHALT,
	11 12	MOIST, NO ODOR. RECOVERY = 6'.
6-8	5 5	BROWN F SAND, SOME SILT, LITTLE PEAT, TRACE COBBLES, STRONG
	4 3	PETROLEUM ODOR & STAINING, WET. RECOVERY = 20'.
8-10	5 7	0-12' BROWN F SAND, SOME SILT, LITTLE PEAT, TRACE COBBLES. 12-18'
	8 13	BROWN/GREY F-C SAND, SOME GRAVEL & COBBLES, PETROLEUM ODOR &
10-12	12 21	STAINING, WET.
	15 13	0-8' BROWN F-M SAND, TRACE COBBLES. 8-18' BROWN F-M SAND, SOME GRAVEL
12-14	3 4	& ROCK FRAGMENTS, STRONG PETROLEUM ODOR & STAINING, WET.
	15 27	BROWN F-M SAND, SOME GRAVEL & ROCK FRAGMENTS, STRONG PETROLEUM
14-16	7 17	ODOR & STAINING, WET. RECOVERY = 6'.
	27 28	BROWN/GREY M-C SAND, LITTLE GRAVEL & COBBLES, STRONG PETROLEUM
		ODOR & STAINING. RECOVERY = 12'.
		SAMPLE MN-B17 COMPOSITED FROM 10-12', 12-14', AND 14-16' INTERVALS.

BORING B-18 LOG

DEPTH	BLOWS PER 6' ON SAMPLER	DESCRIPTION
0-2	4 16	0-6' BROWN FILL, F-M SAND, SOME GRAVEL & COBBLES, LITTLE ORGANICS. 6-12
	12 10	FILL, ASPHALT FRAGMENTS, SOME BROWN F-M SAND, LITTLE GRAVEL, DRY, NO
2-4	45 25	ODOR, BROWN/GREY FILL, F SAND & SILT, SOME SHALE FRAGMENTS, MOIST, NO
	26 20	ODOR.
4-6	18 22	RECOVERY = 12'.
	12 12	BROWN/GREY FILL, F SAND & SILT, SOME SHALE FRAGMENTS, LITTLE ASPHALT,
6-8	4 10	MOIST, NO ODOR. RECOVERY = 14'.
	9 4	0-6' BROWN F SAND & SILT, LITTLE SHALE FRAGMENTS, TRACE PEAT. 6-12'
8-10	4 7	BROWN F SAND & SILT, TRACE ROCK FRAGMENTS, MOIST, PETROLEUM ODOR &
	7 15	STAINING.
10-12	10 17	0-2' BROWN F SAND & SILT, TRACE SHALE FRAGMENTS. 2-14' BROWN/GREY F-M
	24 28	SAND, SOME SHALE FRAGMENTS, TRACE SILT, STRONG PETROLEUM ODOR &
12-14	21 16	STAINING, WET.
	16 17	0-12' BLACK M-C SAND, SOME SHALE FRAGMENTS & COBBLES. 12-16' DK.
14-16	14 19	BROWN F-M SAND, LITTLE COBBLES, STRONG PETROLEUM ODOR & STAINING,
	23 27	WET.
		DK. BROWN F SAND, LITTLE SILT, TRACE SHALE FRAGMENTS, SLIGHT
		PETROLEUM ODOR & STAINING, WET. RECOVERY = 10'.
		BROWN F SAND, SOME SILT, LITTLE SHALE FRAGMENTS & COBBLES, NO
		EVIDENT ODORS OR STAINING, WET. RECOVERY = 12'.
		SAMPLE MN-B18 COMPOSITED FROM 6-8', 8-10', AND 10-12' INTERVALS.

BORING B-19 LOG

DEPTH	BLOWS PER 6' ON SAMPLER	DESCRIPTION
6-8	6 8	0-3' BROWN F-M SAND, SOME GRAVEL. 3-10' BLACK C-M SAND, LITTLE GRAVEL,
	3 3	STRONG PETROLEUM ODOR & STAINING. 10-14' BROWN F SAND & SILT, MOIST.
8-10	3 3	BROWN F SAND & SILT, TRACE GRAVEL, STRONG PETROLEUM ODOR &
	3 4	STAINING.
10-12	3 4	
	7 21	0-16' BROWN F SAND & SILT, TRACE GRAVEL, STRONG PETROLEUM ODOR &
12-14	16 24	STAINING. 16-20' BROWN F-M SAND, SOME GRAVEL, SOME PETROLEUM
	28 53	STAINING.
14-16	10 6	DK. BROWN F-M SAND, LITTLE ROCK FRAGMENTS, STRONG PETROLEUM ODOR
	50/3'	& STAINING.
		NO RECOVERY
		SAMPLE MN-B19 COMPOSITED FROM 6-8', 8-10', AND 12-14' INTERVALS.

BORING B-20 LOG

DEPTH	BLOWS PER 6' ON SAMPLER	DESCRIPTION
4-6	3 4	GREY F SAND, LITTLE SILT, MOIST, SLIGHT PETROLEUM ODOR.
	4 5	RECOVERY = 20'.
6-8	3 4	GREY/TAN F SAND, SOME SILT, MOIST, SLIGHT PETROLEUM ODOR.
	4 7	RECOVERY = 22'.
8-10	6 12	GREY F SAND, LITTLE SILT, TRACE COBBLES & SHALE FRAGMENTS, WET, SLIGHT
	15 17	PETROLEUM ODOR. RECOVERY = 20'.
10-12	5 10	0-5' BROWN F SAND, SOME SILT. 5-22' GREY F-M SAND, LITTLE GRAVEL &
	15 21	COBBLES, WET, NO ODOR.
12-14	10 15	0-8' GREY F-M SAND, TRACE GRAVEL. 8-20' GREY F-M SAND, SOME GRAVEL,
	22 17	COBBLES, & SHALE FRAGMENTS, WET, NO ODOR.

BORING B-21 LOG

DEPTH	BLOWS PER 6' ON SAMPLER	DESCRIPTION
4-6	6 6	GREY/BROWN F SAND, LITTLE SILT, TRACE SHALE FRAGMENTS, DRY, NO ODOR.
	7 8	RECOVERY = 21'.
6-8	8 15	0-6' GREY/BROWN F SAND, LITTLE SILT, TRACE SHALE FRAGMENTS. 6-20' DK.
	12 16	BROWN F-M SAND, LITTLE GRAVEL & COBBLES, TRACE SILT, WET, NO ODOR.
8-10	8 10	0-10' GRAY F SAND & SILT. 10-16' GREY F-M SAND, SOME COBBLES & GRAVEL,
	12 13	TRACE SILT, WET, NO ODOR.
10-12	10 12	GREY F-M SAND, SOME COBBLES & GRAVEL, LITTLE SHALE FRAGMENTS, TRACE
	16 13	SILT, WET, NO ODOR. RECOVERY = 18'.

BORING B-22 LOG

DEPTH	BLOWS PER 6' ON SAMPLER	DESCRIPTION
4-6	13 6	0-16' BROWN F SAND, SOME SILT, TRACE COBBLES.
	6 9	16-18' GREY SHALE FRAGMENTS, DRY, NO ODOR.
6-8	5 15	0-3' BROWN F SAND & SILT, TRACE COBBLES. 3-15' BROWN F SAND, LITTLE
	19 9	GRAVEL, COBBLES, & SHALE FRAGMENTS. 15-18' GREY F SAND & SILT, WET, NO
8-10	9 10	ODOR.
	9 8	0-3' GREY F SAND & SILT. 3-15' DK. GREY F SAND, LITTLE GRAVEL & COBBLES,
10-12	8 10	TRACE SILT, WET, NO ODOR.
		GREY F-M SAND, WET, NO ODOR. RECOVERY = 12'.

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REV. | DESCRIPTION | PREP BY | DATE | APPRVD

TRC Environmental Corporation
DSGN: S. FARRICK DR: K. HOLLENBECK CHK: C. STOPPER
SUPV: CH ENG
SUBMITTED BY: Robert C. Smith V.P. (FIRM MEMBER) (TITLE) 3-17-94 (DATE)
NORTHDIV
FPO
OFFICER IN CHARGE
APPROVED DATE

DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND
NORTHERN DIVISION
LESTER PENNSYLVANIA
NAVAL EDUCATION AND TRAINING CENTER NEWPORT, RHODE ISLAND
REMOVAL ACTION FOR MELVILLE NORTH LANDFILL
SOIL BORING LOGS
APPROVED DATE NORTHDIV FOR COMMANDER, NAVFAC

SEAL AREA 3/17/94
STATE OF CONNECTICUT CARL H. STOPPER No. 13255 LICENSED PROFESSIONAL ENGINEER

SAT TO DATE
CODE I.D. NO. 80091
SCALE AS NOTED
SPEC. NO. 04 - 93 - 0293
CONSTRN. CONTR. NO. N62472-93-C-0293
NAVFAC DRAWING NO. 2164981
SHEET 6 OF 7
SIZE D
DIS. SH. NO. B-1